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THE NEW YORK BOTANICAL GARDEN

VOLUME 17

PART 8

NORTH AMERICAN FLORA

(POALES)

POACEAE (pars)

ALBERT SPEAR HITCHCOCK

JASON RICHARD SWALLEN

AGNES CHASE



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culm usually less than 10 cm. long, sometimes longer, 1-2 mm. wide; panicles terminal and from the upper axils, pale, erect, 3-6 cm. long, about 5 mm. thick, the axis mostly hidden by the imbricate spikelets; spikelets, including awns, about 5 mm. long, the glumes shorter than the lemma, the first 2- or 3-awned, the second usually 1-awned, the awns slightly spreading; lemma 3-nerved, pubescent at the margins, the awn 2-3 mm. long; palea about as long as the lemma, pubescent.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Plains and rocky hills, Colorado to Texas and Arizona, and southward to southern Mexico.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12: pl. 15; Bull. U. S. Dep. Agr. Agrost. 17: f. 450; Bull. U. S. Dep. Agr. 772: f. 76; Hitchc. Man. f. 726.

2. *Lycurus phalaroides* H.B.K. Nov. Gen. & Sp. 1: 142. 1815.

Muhlenbergia lycuroides Vasey; Beal, Grasses N. Am. 2: 239. 1896. (Type from Guadalajara, Mexico, Palmer 489 in 1886).

Lycurus phleoides var. *brevifolius* Beal, Grasses N. Am. 2: 271. 1896. (Specimens cited from Orizaba and Guadalajara, Mexico.)

Culms caespitose, decumbent-spreading, several-noded, compressed, more or less scaberulous especially about the nodes, 15-40 cm. long, producing numerous short leafy fascicled branches at all or many of the nodes; sheaths keeled, scaberulous, scabrous, or scabrous-pubescent, mostly shorter than the internodes; ligule less than 0.5 mm. long, usually not noticeable from side view; blades flat or often more or less folded, scaberulous to pubescent on both surfaces, scabrous on the thickened cartilaginous margin, mostly less than 5 cm. long, 1-2 mm. wide; panicles terminating the culms and branches, slender, compact, pale, greenish or plumbeous, 2-7 cm. long, about 5 mm. thick; first glume 1-awned or with a small lateral one; second glume 1-awned; lemma a little longer than the glumes, the body about 3 mm. long, pilose, the awn 2-3 mm. long.

TYPE LOCALITY: Michoacán, Mexico.

DISTRIBUTION: Rocky hills and plains, Coahuila to Chiapas; also in southern South America.

121. *COLEANTHUS* Seidel; R. & S. Syst. Veg. 2: 276. 1817.

Schmidtia Tratt. Fl. Oesterr. 1: 12. "1816" [perhaps 1811]. Not *Schmidtia* Moench, 1802.

A dwarf annual, about an inch high, with short flat blades and small few-flowered panicles. Spikelets 1-flowered; glumes wanting; lemma ovate, hyaline, terminating in a short awn; palea broad, 2-toothed, the keels awn-tipped.

Type species, *Schmidtia subtilis* Tratt.

1. *Coleanthus subtilis* (Tratt.) Seidel; R. & S. Syst. Veg.

2: 276. 1817.

Schmidtia subtilis Tratt. Fl. Oesterr. 1: 12. "1816."

Zizania subtilis Raspail, Ann. Sci. Nat. 5: 452, 458. 1825. (Based on *Coleanthus subtilis* Seidel.)

Wilibaldia subtilis Roth, Enum. Pl. Germ. 1: 92. 1827. (Based on *Schmidtia subtilis* Tratt.)

Culms spreading, forming little mats, mostly less than 5 cm. long; sheaths glabrous, inflated; ligule less than 1 mm. long; blades glabrous, narrow, gradually narrowed to a point, usually curved backward, mostly less than 2 cm. long or the uppermost much reduced; panicles as much as 2 cm. long, with 3 or 4 clusters of spikelets on a slender axis; pedicels pubescent, about 1 mm. long; caryopsis about 1 mm. long, the lemma, including awn, a little longer.

TYPE LOCALITY: Europe.

DISTRIBUTION: Mud flats along the lower Columbia river, Oregon and Washington, well-established but probably introduced; native of northern Eurasia.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. 772: f. 71; Hitchc. Man. f. 700.

MIBORA MINIMA (L.) Desv. Obs. Angers 45. 1818. *Agrostis minima* L. Sp. Pl. 63. 1753. Delicate annual, 3-10 cm. tall, with short narrow blades and slender racemes of 6-8 appressed purple spikelets 2 mm. long, the glumes obtuse, the lemma and palea shorter, pubescent. TYPE LOCALITY: France. DISTRIBUTION: Plymouth, Massachusetts; Sidney, Vancouver Island; native of Europe.

Tribe 9. **AVENEAE**. Annual or perennial, low or rather tall grasses, with flat or sometimes involute blades and often large spikelets in open or contracted panicles, rarely in racemes. Spikelets 2-several-flowered; glumes usually as long as or longer than the first lemma, commonly longer than all the florets; lemmas usually awned from the back or from between the teeth of a bifid apex, the awn usually bent, often twisted, the callus and rachilla-joints usually villous. A rather small tribe widely distributed in both warm and cool regions. In our genera the rachilla is prolonged beyond the upper floret as a slender stipe (except in *Holcus* and *Aira*). The lemma is awnless in *Schismus*, *Sieglingia*, *Dissanthelium*, *Peyritschia*, two species of *Trisetum*, one species of *Koeleria*, and most of the species of *Sphenopholis*. The last two genera are placed in this tribe (instead of in *Festuceae*) because they appear to be closely allied to *Trisetum*, with which they agree in having oblanceolate glumes about as long as the first floret, and *Dissanthelium* and *Peyritschia* are placed here because the glumes are longer than the florets. The rachilla disarticulates above the glumes except in *Sphenopholis*, *Holcus*, and a few species of *Trisetum*.

Florets all alike except the reduced upper ones, 2 or more.

Articulation below the glumes, the spikelets falling entire.

Lemmas, at least the upper, with a conspicuous bent awn; glumes nearly alike.

Lemmas awnless or (in *S. pallens* and *S. filiformis*) the upper with a short awn; second glume much wider than the first.

Articulation above the glumes, the glumes similar in shape.

Spikelets 2-flowered, sometimes with a rudimentary third floret.

Spikelets less than 1 cm. long.

Awn of lemma with a short-bearded joint about the middle.

Awn, when present, not jointed.

Lemmas keeled, the awn, when present, from about the middle.

Glumes about equal, rather broad.

Glumes unequal, the second wider and usually longer than the first.

Rachilla-joints very short, glabrous or minutely pubescent; lemmas awnless or with a straight awn from a toothed apex.

Rachilla-joints slender, villous; lemmas with a dorsal bent awn (awnless or nearly so in two species).

Lemmas convex.

Rachilla prolonged beyond the second floret.

Lemmas awnless, or short-awned just below the tip.

Lemmas awned below the middle.

Rachilla not prolonged.

Spikelets large, the glumes more than 1 cm. long.

Spikelets several-flowered; lemmas bifid at the apex, awned or mucronate between the lobes.

Lemmas mucronate only.

Plants annual; spikelets not more than 5 mm. long.

Plants perennial; spikelets 8-10 mm. long.

Lemmas with prominent awns.

Florets 2, unlike, the one perfect, the other staminate.

Spikelets solitary on the branches of the narrow or condensed panicle.

Lower floret staminate, the awn twisted, geniculate, exserted.

Lower floret perfect, awnless; upper floret awned.

Spikelets in groups of three at the ends of the branches of an open panicle.

126. TRISETUM.

122. SPHENOPHOLIS.

123. CORYNEPHORUS.

124. DISSANTHELIUM.

125. KOELERIA.

126. TRISETUM.

127. PEYRITSCHIA.

128. DESCHAMPSIA.

129. AIRA.

130. AVENA.

131. SCHISMUS.

132. SIEGLINGIA.

133. DANTHONIA.

134. ARRHENATHERUM.

135. HOLCUS.

136. TRISTACHYA.

122. SPHENOPHOLIS Scribn. Rhodora 8: 142. 1906.

Trisetum section *Colobanthus* Trin. Mém. Acad. St.-Petersb. VI. 1: 66. 1830. (Type species, *Koeleria pennsylvanica* DC.)

Reboulea Kunth, Rév. Gram. 341. 1830. (Type species, *R. gracilis* Kunth.) Not *Reboullia* Raddi, 1818.

Colobanthus Spach, Hist. Vég. 13: 163. 1846. (Based on *Trisetum* section *Colobanthus* Trin.) Not *Colobanthus* Bartl. 1830.

Slender perennial (rarely annual) grasses, with usually flat blades and narrow shining panicles. Spikelets 2-flowered or 3-flowered, the pedicel disarticulating below the glumes, the rachilla produced beyond the upper floret as a slender bristle; glumes unlike in shape, the first narrow, usually acute, 1-nerved, the second broadly obovate, 3-5-nerved, the nerves sometimes obscure, mostly somewhat coriaceous, the margin scarious; lemmas firm, scarcely nerved, awnless or rarely with an awn from just below the apex, the first a little shorter or a little longer than the second glume; palea hyaline, exposed.

Type species, *Aira obtusata* Michx.

NOTE: Scribner applied the name *Sphenopholis* to a group of grasses then known as *Eatonia*. He showed that the original description of the latter could not apply to the genus as later described by Endlicher (Gen. Pl. 99. 1837). The type species of *Eatonia* Raf. proved to be *Panicum virgatum* L. (Hitchc. Contr. U. S. Nat. Herb. 15: 87. 1910).

- Panicle dense, usually spikelike, erect or nearly so; second glume subcucullate. 1. *S. obtusata*.
 Panicle not dense, lax, nodding, from very slender to many-flowered, but not spikelike.
 Spikelets awnless (rarely awned in *S. filiformis*).
 Lemmas not scaberulous-papillose; second glume acute or subacute; panicle many-flowered.
 Second glume about 2.5 mm. long. 2. *S. intermedia*.
 Second glume about 3.5 mm. long. 3. *S. longiflora*.
 Lemmas scaberulous-papillose; second glume broadly rounded at summit; panicle relatively few-flowered.
 Blades rarely more than 10 cm. long, flat, 2-5 mm. wide. 4. *S. nitida*.
 Blades elongate, flat to subinvolute, mostly less than 2 mm. wide. 5. *S. filiformis*.
 Spikelets awned. 6. *S. pallens*.

1. *Sphenopholis obtusata* (Michx.) Scribn. Rhodora 8: 144. 1906.

- Aira obtusata* Michx. Fl. Bor. Am. 1: 62. 1803.
Airopsis obtusata Desv. Jour. de Bot. Desv. 1: 200. 1808. (Based on "*Agrostis*" [*Aira*] *obtusata* Michx.)
Aira truncata Muhl. Descr. Gram. 83. 1817. (Type from Pennsylvania.)
Koeleria paniculata Nutt. Gen. Add. 1818. (Type from East Florida, T. Say.)
Koeleria truncata Torr. Fl. U. S. 116. 1823. (Based on *Aira truncata* Muhl.)
Poa obtusata Link. Hort. Berol. 1: 176. 1827. (Based on *Aira obtusata* Michx.)
Trisetum lobatum Trin. Mém. Acad. St.-Petersb. VI. 1: 66. 1830. (Type from North America.)
Reboullea gracilis Kunth, Rév. Gram. 341. 1830. (Type from New England to Florida and Carolina.)
Reboullea obtusata A. Gray, Man. 591. 1848. (Based on *Aira obtusata* Michx.)
Eatonia obtusata A. Gray, Man. ed. 2. 558. 1856. (Based on *Aira obtusata* Michx.)
Eatonia densiflora Fourn. Mex. Pl. Gram. 111. 1886. (Type from Bejar, Texas, *Berlandier 1617*.)
Eatonia obtusata var. *robusta* Vasey; L. Dewey, Contr. U. S. Nat. Herb. 2: 544. 1894. (Type from Wallisville, Texas.)
Eatonia obtusata var. *purpurascens* Vasey; Rydb. & Shear, Bull. U. S. Dep. Agr. Agrost. 5: 30. 1897. (Type from False Washita, Oklahoma, *Palmer 404*.)
Eatonia pubescens Scribn. & Merr. Circ. U. S. Dep. Agr. Agrost. 27: 6. 1900. (Type from Starkville, Mississippi, *Tracy*.)
Eatonia robusta Rydb. Bull. Torrey Club 32: 602. 1905. (Based on *E. obtusata* var. *robusta* Vasey.)
Sphenopholis obtusata lobata Scribn. Rhodora 8: 144. 1906. (Based on *Trisetum lobatum* Trin.)
Sphenopholis obtusata pubescens Scribn. Rhodora 8: 144. 1906. (Based on *Eatonia pubescens* Scribn. & Merr.)
Eatonia annua Suksd. W. Am. Sci. 15: 50. 1906. (Type from Dalles on the Columbia River, Oregon, *Suksdorf 1553*. Plants subperpetuate, flowering the first year.)
Sphenopholis annua A. Heller, Muhlenbergia 6: 12. 1910. (Based on *Eatonia annua* Suksd.)
Sphenopholis pubescens A. Heller, Muhlenbergia 6: 12. 1910. (Based on *Eatonia pubescens* Scribn. & Merr.)
Sphenopholis robusta A. Heller, Muhlenbergia 6: 12. 1910. (Based on *Eatonia obtusata* var. *robusta* Vasey.)
Reboullea obtusata var. *pubescens* Farwell, Rep. Mich. Acad. 17: 181. 1916. (Based on *Eatonia pubescens* Scribn. & Merr.)
Reboullea obtusata var. *lobata* Farwell, Rep. Mich. Acad. 17: 182. 1916. (Based on *Trisetum lobatum* Trin.)

Culms erect, tufted, glabrous or slightly scaberulous, especially below the panicle, 30-100 cm. tall; sheaths glabrous or finely retrorsely pubescent; ligule truncate; erose-dentate; blades flat, glabrous or scabrous or pubescent, mostly 2-5 mm. wide; panicle erect or somewhat nodding when long and heavy, dense, spikelike to interrupted or lobed, rarely slightly looser, green or tinged with purple, often stramineous at maturity, 5-20 cm. long; spikelets 2.5-3.5 mm. long, the 2 florets closer together than in the other species; first glume 1-nerved, very

narrow, scabrous on the keel, about as long as the second; second glume very broad, subcucullate, somewhat inflated at maturity, 5-nerved, scabrous, hyaline-margined; lemmas minutely papillose in texture, the tip greenish, rarely mucronate or with a short straight awn, the lower about 2.5 mm. long.

TYPE LOCALITY: "Carolina to Florida," the type specimen from Florida.

DISTRIBUTION: Open woods, old fields, moist ground, and prairies, Maine to British Columbia, and southward to Florida and Mexico; Dominican Republic.

ILLUSTRATIONS: Kunth, *Rév. Gram. pl. 84*; Bull. U. S. Dep. Agr. *Agrost. 7: f. 252*; Hitchc. *Man. f. 544*.

NOTE: Variable in size and in denseness of panicle. Sometimes annual or flowering the first season. Specimens with less dense and lobed panicles may be distinguished from more densely panicked specimens of *S. intermedia* by the broader, firmer, subcucullate second glume and more approximate florets.

2. *Sphenopholis intermedia* (Rydb.) Rydb. Bull. Torrey Club 36: 533. 1909.

Koeleria truncata var. *major* Torr. Fl. U. S. 117. 1823. (Type from Deerfield, Massachusetts, Cooley.)

Koeleria? pennsylvanica var. *major* Torr. Fl. N. Y. 2: 469. 1843. (Based on *Koeleria truncata* var. *major* Torr.)

Reboulea pennsylvanica var. *major* A. Gray, *Man.* 591. 1848. (Presumably based on *Koeleria truncata* var. *major* Torr.)

?*Aira controversa* Steud. *Syn. Gram.* 224. 1854. (Type from Ohio.)

Eatonia pennsylvanica var. *major* A. Gray, *Man.* ed. 2: 558. 1856. (Presumably based on *Koeleria truncata* var. *major* Torr.)

Vilfa alba Buckl. *Proc. Acad. Phila.* 1862: 89. 1862. (Type from "Oregon, Spalding"). Not *V. alba* Beauv. 1812.

Eatonia intermedia Rydb. *Bull. Torrey Club* 32: 602. 1905.

Sphenopholis pallens major Scribn. *Rhodora* 8: 145. 1906. (Based on *Koeleria truncata* var. *major* Torr.)

Reboulea pallens var. *major* Farwell, *Rep. Mich. Acad.* 17: 182. 1916. (Based on *Koeleria truncata* var. *major* Torr.)

Culms erect, in small tufts, slender, glabrous, sometimes scabrous below the panicle, 30–120 cm. tall; sheaths glabrous or scabrous or pubescent; ligule 1–3 mm. long, truncate, erose-dentate; blades flat, often elongate, lax, mostly scaberulous, occasionally sparsely pilose, mostly 2–6 mm. wide, sometimes wider; panicle nodding, from rather dense to open, mostly 10–20 cm. long, the axis more or less scaberulous, the branches very slender, scabrous, spikelet-bearing from near the base; spikelets 3–4 mm. long, the rachilla between the 2 florets about 1 mm. long; first glume very narrow, shorter than the second; second glume relatively thin, acute or subacute, about 2.5 mm. long; lemmas subacute, rarely mucronate, smooth or rarely very minutely roughened, greenish at apex, mostly 2.5–3 mm. long; palea thin, narrow, a little shorter than the lemma.

TYPE LOCALITY: East Gallatin Swamps, Montana, *Rydberg 3174*.

DISTRIBUTION: Damp or rocky woods, slopes, and moist places, Newfoundland to British Columbia, and southward to Florida and Arizona; Tanana Hot Springs, Alaska.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. *Agrost. 7: f. 251* (as *Eatonia pennsylvanica*); Hitchc. *Man. f. 544 B*.

NOTE: This is the species which has recently been called *Sphenopholis pallens* Scribn., but it is not the same as *Aira pallens* Spreng., on which that name is based.

3. *Sphenopholis longiflora* (Vasey) Hitchc. Jour. Wash. Acad. 23: 453. 1933.

Eatonia pennsylvanica var. *longiflora* Vasey; L. Dewey, *Contr. U. S. Nat. Herb.* 2: 544. 1894.

Eatonia longiflora Beal, *Grasses N. Am.* 2: 494. 1896. (Based on *Eatonia pennsylvanica* var. *longiflora* Vasey.)

Sphenopholis pallens longiflora Scribn. *Rhodora* 8: 145. 1906. (Based on *Eatonia pennsylvanica* var. *longiflora* Vasey.)

Reboulea pallens var. *longiflora* Farwell, *Rep. Mich. Acad.* 17: 182. 1916. (Based on *Eatonia longiflora* Beal.)

Culms relatively stout, erect from a decumbent base, glabrous, 40–70 cm. tall; lower sheaths puberulent, the others glabrous; ligule truncate, erose-dentate, 1–2 mm. long; blades thin, flat, scaberulous, 5–18 cm. long, 3–8 mm. wide; panicle many-flowered, rather loose, slightly nodding, 10–18 cm. long, the axis glabrous, the branches very slender, somewhat

flexuous, scabrous, the primary branches as much as 5 cm. long, naked below; spikelets mostly 2-flowered, 4.5-5 mm. long, the rachilla appressed-pilose, 1.3-1.5 mm. long; glumes very scabrous on the green part, about equal in length, the first very narrow, the second thin, acute, about 3.5 mm. long, the hyaline margin broad; lemmas smooth, scaberulous toward the tip, the first about 4 mm. long; palea much shorter than the lemma, the upper bowed out.

TYPE LOCALITY: Houston, Texas (*Nealley* in 1892).

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Hitchc. Man. f. 546.

4. *Sphenopholis nitida* (Spreng.) Scribn. *Rhodora* 8: 144. 1906.

Aira nitida Spreng. Mant. Fl. Hal. 32. 1807.

Aira pennsylvanica Spreng. Mem. Acad. St.-Petersb. 1807-08: 299. 1810. (Type from Pennsylvania.)

Koeleria pennsylvanica DC. Cat. Pl. Hort. Monsp. 117. 1813. (Based on *Aira pennsylvanica* Spreng.)

Aira mollis Muhl. Descr. Gram. 82. 1817. (Type from Pennsylvania.) Not *A. mollis* Schreb. 1771.

Trisetum pennsylvanicum Trin. Mém. Acad. St.-Petersb. VI. 1: 66. 1830. (Based on *Aira pennsylvanica* Spreng.) Not *Trisetum pennsylvanicum* Beauv. 1817.

Glyceria pennsylvanica Heynh. Nom. 1: 361. 1840. (Based on *Aira pennsylvanica* Spreng.)

Reboulea pennsylvanica A. Gray, Man. 591. 1848. (Based on *Koeleria pennsylvanica* DC.)

Eatonia pennsylvanica A. Gray, Man. ed. 2. 558. 1856. (Based on *Koeleria pennsylvanica* DC.)

Eatonia Dudleyi Vasey, Bot. Gaz. 11: 116. 1886. (Type from Ithaca, New York, *Dudley* in 1882.)

Eatonia nitida Nash, Bull. Torrey Club 22: 511. 1895. (Based on *Aira nitida* Spreng.)

Eatonia glabra Nash in Britton, Man. 1043. 1901. (Type from Madison Co., Tennessee, *Bain* 507.)

Sphenopholis nitida glabra Scribn. *Rhodora* 8: 145. 1906. (Based on *Eatonia glabra* Nash.)

Sphenopholis glabra A. Heller, *Muhlenbergia* 6: 12. 1910. (Based on *Eatonia glabra* Nash.)

Reboulea nitida Farwell, Rep. Mich. Acad. 17: 181. 1916. (Based on *Aira nitida* Spreng.)

Reboulea nitida var. *glabra* Farwell, Rep. Mich. Acad. 17: 181. 1916. (Based on *Eatonia glabra* Nash.)

Culms tufted, leafy at the base, slender, glabrous, 30-70 cm. tall; sheaths and blades mostly softly pubescent, sometimes glabrous; ligule truncate, erose-dentate, 0.5-1 mm. long; blades 3-10 cm. long, the basal sometimes longer, 2-5 mm. wide; panicle rather few-flowered, usually long-exserted, mostly 8-12 cm. long, rather lax and nodding, the axis glabrous, the filiform branches distant, ascending, spreading at anthesis, mostly naked at base; spikelets 3-3.5 mm. long, the rachilla between the florets scaberulous, about 1 mm. long; glumes about equal in length, 2.5 mm. long, usually nearly as long as the first floret, the first broader than in the other species; second glume broadly rounded at summit, acute; lemmas, at least the second, scabrous-papillose.

TYPE LOCALITY: Pennsylvania (*Muhlenberg*).

DISTRIBUTION: Dry or rocky woods, Massachusetts to North Dakota, and southward to Florida and Texas.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 253; Hitchc. Man. f. 547.

5. *Sphenopholis filiformis* (Chapm.) Scribn. *Rhodora* 8: 144. 1906.

Eatonia pennsylvanica var. *filiformis* Chapm. Fl. S. U. S. 560. 1860.

Eatonia filiformis Vasey, Bot. Gaz. 11: 117. 1886. (Based on *Eatonia pennsylvanica* var. *filiformis* Chapm.)

Eatonia hybrida Vasey; Beal, Grasses N. Am. 2: 491. 1896. (Type from Florida, *Curtiss* in 1886.)

Reboulea filiformis Farwell, Rep. Mich. Acad. 17: 182. 1916. (Based on *Eatonia pennsylvanica* var. *filiformis* Chapm.)

Culms tufted, erect, glabrous, very slender, 30-60 cm. tall; sheaths glabrous, or the lower more or less pubescent or pilose; ligule obtuse, erose or ciliate, 0.5-1 mm. long; blades slender, lax, flat to subinvolute, or even closely involute, glabrous beneath, scabrous on the upper surface, or, especially the lower, more or less pubescent, elongate, mostly less than 2 mm. wide; panicle slender, loose, often nodding, 5-15 cm. long, the slender axis somewhat scaberulous, the capillary branches rather distant, scabrous, erect or ascending, mostly floriferous from near the base; spikelets 3-4 mm. long, 2-flowered or 3-flowered, the rachilla-joint between the first and second florets about 0.8 mm. long, scaberulous; glumes nearly glabrous, the first narrow, a little shorter than the second; second glume broadly rounded above, acutish, 2 mm. long; or a little more; first lemma about 2.5 mm. long, smooth or nearly so; second lemma smaller, scabrous; palea prominent, broad above, scabrous on the keels.

TYPE LOCALITY: Florida (*Chapman*).

DISTRIBUTION: Dry soil, on the coastal plain, North Carolina to Florida, Tennessee, and eastern Texas.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 254; Hitchc. Man. f. 549.

NOTE: Occasional awned lemmas, either the first or second, are found in some panicles.

6. *Sphenopholis pallens* (Spreng.) Scribn. Rhodora 8: 145. 1906.

Aira pallens Spreng. Mant. Fl. Hal. 33. 1807.

Aira pallens Muhl. Descr. Gram. 84. 1817. (Type presumably from Pennsylvania; no locality cited.)

Eatonia aristata Scribn. & Merr. Circ. U. S. Dep. Agr. Agrost. 27: 7. 1900. (Type from South Carolina, *Curtiss* in 1875.)

Eatonia pallens Scribn. & Merr. Circ. U. S. Dep. Agr. Agrost. 27: 7. 1900. (Based on *Aira pallens* Spreng., but the name misapplied to *Sphenopholis intermedia* Rydb.)

Trisetum aristatum Nash, in Small, Fl. SE. U. S. 130. 1903. (Presumably based on *Eatonia aristata* Scribn. & Merr.)

Sphenopholis aristata Heller, Muhlenbergia 6: 12. 1910. (Based on *Eatonia aristata* Scribn. & Merr.)

Reboulea pallens Farwell, Rep. Mich. Acad. 17: 181. 1916. (Based on *Aira pallens* Spreng.)

Culms erect, about 60 cm. tall; lower sheaths minutely pubescent, the upper glabrous; ligule truncate, about 1 mm. long; blades flat, glabrous, 1-2 mm. wide; panicle narrow, nodding, loose, or somewhat compact, 15-25 cm. long, the axis nearly glabrous, the capillary branches ascending, the lower distant, some floriferous from near the base, some naked at the base; spikelets about as in *S. intermedia*, 2-flowered or 3-flowered, 3-3.5 mm. long; first glume narrow, a little shorter than the second; second lemma scabrous, usually awned just below the apex, the awn scabrous, usually geniculate, 1-2 mm. long.

TYPE LOCALITY: Pennsylvania (*Muhlenberg*).

DISTRIBUTION: Pennsylvania, North Carolina, and South Carolina.

ILLUSTRATION: Hitchc. Man. f. 551.

123. *CORYNEPHORUS* Beauv. Agrost. 90. 1812.

Weingaertneria Bernh. Syst. Verz. Pfl. 23, 51. 1800. (Type species, *Aira canescens* L.)

Low annual grasses, with narrow blades and contracted or open panicles of small spikelets. Spikelets 2-flowered, the rachilla disarticulating above the glumes, produced beyond the second floret; glumes nearly equal, acute, longer than the two florets; lemmas thin, entire, awned from near the base, the awn jointed about the middle, the joint with a minute ring of hairs.

Type species, *Aira canescens* L.

1. *Corynephorus canescens* (L.) Beauv. Agrost. 90, 149, 159. 1812.

Aira canescens L. Sp. Pl. 65. 1753.

Avena canescens Weber, in Wiggers, Prim. Fl. Holsat. 9. 1780. (Based on *Aira canescens* L.)

Weingaertneria canescens Bernh. Syst. Verz. Pfl. 23, 51. 1800. (Based on *Aira canescens* L.)

Culms much branched at the base, tufted, erect, glabrous, 15-30 cm. tall; sheaths roughish, usually purple; ligule obtuse, 2-3 mm. long; blades filiform, involute, scabrous, mostly basal, rather stiff; panicle erect, spikelet-like or somewhat open, 3-8 cm. long, the axis roughish, the branches appressed; spikelets 2-flowered; glumes nearly equal, about 3 mm. long, pinkish, acute, minutely scabrous; lemmas somewhat pilose at base; awn about as long as the glumes, brown and tightly twisted below, white above, the summit somewhat thickened.

TYPE LOCALITY: Europe.

DISTRIBUTION: Sandy open ground and waste places, introduced at a few places in the eastern United States; native of Europe.

ILLUSTRATION: Bull. U. S. Dep. Agr. Agrost. 20: f. 67.

124. *DISSANTHELIUM* Trin. Linnaea 10: 305. 1836.

Phalaridium Nees & Meyen; Nees, Nova Acta Acad. Leop.-Carol. 19: Suppl. 161. 1843. (Type species, *P. peruvianum* Nees & Meyen.)

Stenochloa Nutt. Jour. Acad. Phila. II, 1: 189. 1848. (Type species *S. californica* Nutt.)

Annual or perennial low grasses with flat or involute blades and narrow panicles. Spikelets 2-flowered, the rachilla slender, naked, disarticulating above the glumes and between the

florets, prolonged beyond the second floret as a minute stipe; glumes firm, nearly equal, acuminate, longer than the lower floret, mostly exceeding both florets, the first 1-nerved, the second 3-nerved; lemmas strongly compressed, oval or elliptic, acute, awnless, 3-nerved, the lateral nerves near the margin; palea somewhat shorter than the lemma.

Type species, *Dissanthelium supinum* Trin.

Plants perennial, tufted, mostly less than 10 cm. tall; lemmas very minutely scabrous.

Plants annual, about 30 cm. tall; lemmas pubescent.

1. *D. sclerochloides*.
2. *D. californicum*.

1. *Dissanthelium sclerochloides* Fourn. Mex. Pl. Gram. 112. 1886.

Perennial; culms densely tufted, glabrous, mostly less than 10 cm. tall; sheaths glabrous, loose, somewhat compressed-keeled, striate-nerved; ligule truncate or rounded, dentate, about 1 mm. long, the thin margins of the sheath extending upward into a shoulder or short auricle; blades numerous, pale, cartilaginous, folded or involute, sulcate (at least when dry), glabrous, 1-1.5 mm. wide when flattened out, mostly less than 5 cm. long, the margins very minutely scabrous, the tips abruptly acute or boat-shaped; panicle pale or purplish, dense, ovoid, 1-1.5 cm. long, the axis glabrous, the branches appressed, bearing 1-3 spikelets, minutely puberulent below the spikelets; spikelets 2-flowered, the rachilla between the florets very short; glumes equal, glabrous (even the keel), cartilaginous, broad, acute, 3.5 mm. long, the first 1-nerved, the second rather obscurely 5-nerved; lemmas very minutely scabrous, especially the second, obscurely nerved, ovate-lanceolate, the first 2.5 mm. long, about 1 mm. wide, the second a little shorter and narrower; anthers 1 mm. long.

TYPE LOCALITY: Mexico (cited specimens, Nevada de Toluca, *Hahn*, San Luis Potosí, *Virlet 1434*).

DISTRIBUTION: Alpine regions of high mountains, Mexico (Ixtacciuatl, *Purpus 1633*, Nevada de Toluca, *Pringle 4222*).

NOTE: This species differs from *D. calycinum* (Presl) Hitchc. of Peru and Bolivia in its larger spikelets.

2. *Dissanthelium californicum* (Nutt.) Benth. in Hook. Ic.

14: 56. 1881.

Stenochloa californica Nutt. Jour. Acad. Phila. II. 1: 189. 1848.

Annual, lax; culms more or less decumbent or spreading, glabrous, about 30 cm. tall; sheaths glabrous, rather loose, striate-nerved; ligule truncate, 3 mm. long; blades flat, lax, glabrous, 10-15 cm. long, 1-3 mm. wide, the uppermost near the panicle, not reduced; panicle narrow, loose, about 15 cm. long, the axis glabrous, the branches fascicled, ascending, flexuous, some of them floriferous from the base; spikelets 2-flowered (rarely 3-flowered), the rachilla between the florets slender, glabrous, 0.5 mm. long; glumes longer than the two florets, narrow, acute, glabrous, nearly equal, about 3 mm. long, the first 1-nerved, the second 3-nerved; lemmas pubescent, ovate-lanceolate, compressed, nearly 2 mm. long.

TYPE LOCALITY: Santa Catalina Island, California (*Gambel*).

DISTRIBUTION: Open ground, islands off the coast of southern California and Baja California.

ILLUSTRATIONS: Hook. Ic. *pl.* 1375; Hitchc. *Man. f.* 345.

125. *KOELERIA* Pers. Syn. Pl. 1: 97. 1805.

Airochloa Link, Hort. Berol. 1: 126. 1827. (Selected type species, *Koeleria cristata* (L.) Pers.)

Lophochloa Reichenb. Fl. Germ. Exc. 42. 1830. (Type species, *L. phaeoides* Reichenb.)

Brachystylus Dulac, Fl. Hautes-Pyr. 85. 1867. (Based on *Koeleria* Pers.)

Slender, low or rather tall, annual or perennial grasses, with narrow blades and shining spikelike panicles. Spikelets 2-4-flowered, compressed, the rachilla disarticulating above the glumes and between the florets, prolonged beyond the perfect florets as a slender bristle or bearing a reduced floret at the tip; glumes usually about equal in length, unlike in shape, the lower narrow, sometimes shorter, 1-nerved, the upper wider than the lower, broadened above the middle, 3-5-nerved; lemmas somewhat scarios, shining, the lowest a little longer than

the glume, obscurely 5-nerved, acute or short-awned, the awn, if present, borne just below the apex.

Type species, *Koeleria cristata* Pers.

Plants perennial; spikelets usually awnless.
Plants annual; spikelets awned.

1. *K. cristata*.
2. *K. phleoides*.

1. *Koeleria cristata* (L.) Pers. Syn. Pl. 1: 97. 1805.

Aira cristata L. Sp. Pl. 63. 1753.

Poa cristata L. Syst. Nat. ed. 12. 94. 1767. (Based on *Aira cristata* L.)

Festuca cristata Vill. Hist. Pl. Dauph. 1: 250. 1786. (Based on *Aira cristata* L.) Not *Festuca cristata* L.

Koeleria gracilis Pers. Syn. Pl. 1: 97. 1805. (Type from Europe.)

Koeleria nitida Nutt. Gen. 1: 74. 1818. (Type from Plains of the Missouri.)

Aira gracilis Trin. Fund. Agrost. 144. 1820. (Based on *Koeleria gracilis* Pers.)

Airochloa cristata Link. Hort. Berol. 1: 127. 1827. (Based on *Aira cristata* L.)

Airochloa gracilis Link. Hort. Berol. 2: 276. 1833. (Based on *Koeleria gracilis* Pers.)

Koeleria cristata var. *Nuttallii* Wood, Class-Book ed. 2. 613. 1847. (Presumably based on *K. nitida* Nutt.)

Koeleria cristata var. *gracilis* A. Gray, Man. 591. 1848. (Presumably based on *K. gracilis* Pers.)

Brachystylus cristatus Dulac, Fl. Hautes-Pyr. 85. 1867. (Based on *Koeleria cristata* Pers.)

Koeleria nitida var. *arkansana* Scribn. Trans. Kansas Acad. Sci. 9: 118. 1885. (Type from Arkansas, Nuttall.)

Achaeta geniculata Fourn. Mex. Pl. Gram. 109. 1886. (Type from Mexico, Liebmann 609.)

Koeleria cristata var. *pubescens* Vasey; Davy, in Jepson, Fl. W. Middle Calif. 61. 1901. (Type from San Francisco, California, Michener & Bioletti.) Not *K. cristata* var. *pubescens* Mutel, 1837.

Koeleria cristata var. *longifolia* Vasey; Davy, in Jepson, Fl. W. Middle Calif. 61. 1901. (Type from Santa Cruz Co., California, Anderson.)

Koeleria cristata var. *pinetorum* Abrams, Fl. Los Angeles 46. 1904. (Based on *K. cristata* var. *pubescens* Vasey.)

Koeleria pseudocrisata var. *californica* Domin, Magyar Bot. Lap. 3: 264. 1904. (Type from San Diego, California, Pringle in 1882.)

Koeleria elegantula Domin, Bibl. Bot. 65: 172. 1907. (Type from Gunnison, Colorado, Baker 578.)

Koeleria Robinsoniana Domin, Bibl. Bot. 65: 172. 1907. (Type from Wenatchee, Washington, Whited 1131.)

Koeleria Robinsoniana var. *australis* Domin, Bibl. Bot. 65: 173. 1907. (Type from Blalocks, Oregon, Leckeny 28 in 1900.)

Koeleria gracilis subsp. *gracilis* var. *dasyclada* Domin, Bibl. Bot. 65: 211. 1907. (Type from California, Lemmon in 1882.)

Koeleria gracilis subsp. *pseudocrisata* Domin, Bibl. Bot. 65: 222. 1907. (Two American forms: *densevestita*, California, Hall 2206; *laxa*, California, Heller 7443.)

Koeleria gracilis subsp. *pseudocrisata* var. *longifolia* Domin, Bibl. Bot. 65: 224. 1907. (Type from California, Nuttall.)

Koeleria gracilis subsp. *pseudocrisata* var. *oregana* Domin, Bibl. Bot. 65: 224. 1907. (Type from Oregon, Nuttall.)

Koeleria gracilis subsp. *pseudocrisata* var. *pseudonitida* Domin, Bibl. Bot. 65: 224. 1907. (Type from Wyoming, Nelson 273.)

Koeleria polyantha var. *californiensis* Domin, Bibl. Bot. 65: 226. 1907. (Type from San Jacinto Mts., California, Hall 2131.)

Koeleria gracilis subsp. *nitida* var. *missouriana* Domin, Bibl. Bot. 65: 233. 1907. (Two specimens cited, St. Louis, Missouri, Riehl 44 and Courtney, Missouri, Bush 773.)

Koeleria gracilis subsp. *nitida* var. *californica* Domin, Bibl. Bot. 65: 233. 1907. (Based on *K. pseudocrisata* var. *californica* Domin. Three subvarieties from California: *transiensis*, Brandegee 3678; *multiflora*, Parish Brothers 855; *vestita*, Palmer 405.)

Koeleria gracilis subsp. *nitida* var. *sublanuginosa* Domin, Bibl. Bot. 65: 234. 1907. (Type from Miranda, South Dakota, Griffiths 235; subvar. *pubiflora*, Washington, Lyall in 1860.)

Koeleria gracilis subsp. *nitida* var. *laxa* Domin, Bibl. Bot. 65: 235. 1907. (Two specimens cited, Arizona, Palmer in 1890, and New Mexico, Metcalfe.)

Koeleria gracilis subsp. *nitida* var. *subrepens* Domin, Bibl. Bot. 65: 235. 1907. (Type from Arboles, Colorado, Baker 185.)

Koeleria gracilis subsp. *nitida* var. *munita* Domin, Bibl. Bot. 65: 235. 1907. (Type from Montana, Rydberg 3294.)

Koeleria gracilis subsp. *nitida* var. *latifrons* Domin, Bibl. Bot. 65: 236. 1907. (Type from Nebraska, Rydberg.)

Koeleria gracilis subsp. *nitida* var. *breviculmis* Domin, Bibl. Bot. 65: 236. 1907. (Type from Colorado, Baker, Earle, & Tracy 114.)

Koeleria gracilis subsp. *nitida* var. *caudata* Domin, Bibl. Bot. 65: 236. 1907. (Type from Wisconsin, Kumlén 99.)

?*Koeleria gracilis* subsp. *nitida* var. *mexicana* Domin, Bibl. Bot. 65: 236. 1907. (Type from Mexico.)

Koeleria gracilis subsp. *idahoensis* Domin, Bibl. Bot. 65: 237. 1907. (Type from Lewiston, Idaho, Heller "309" [error for 3091].)

Koeleria gracilis subsp. *idahoensis* var. *pseudocrisatoides* Domin, Bibl. Bot. 65: 238. 1907. (Type from Nez Perce Co., Idaho, Heller 3291.)

Koeleria gracilis subsp. *macrura* Domin, *Bibl. Bot.* 65: 238. 1907. (Three forms: *quadriflora*, Arizona, *Nealley* in 1891; *triflora*, Organ Mountains, New Mexico, *Wootton 110*; *biflora*, Chiricahua Mts., Arizona, *Toumey* in 1896.)

Koeleria latifrons Rydb. *Brittonia* 1: 84. 1931. (Based on *K. nitida* var. *latifrons* Domin.)

Tufted perennial; culms erect, slender, puberulent below the panicle, often puberulent at and below the nodes, otherwise usually glabrous, 30-60 cm. tall; sheaths, at least the lower, pubescent; ligule truncate, usually less than 0.5 mm. long; blades flat or involute, glabrous or, especially the lower, pubescent, 1-3 mm. wide; panicle erect, spikelike, dense (loose in anthesis), often lobed, interrupted, or sometimes branched below, 4-15 cm. long, tapering at the summit, sometimes tinged with purple; spikelets mostly 4-5 mm. long; glumes and lemmas scaberulous, 3-4 mm. long, sometimes short-awned, the rachilla joints very short; palea narrow, thin, nearly as long as its lemma.

TYPE LOCALITY: Europe.

DISTRIBUTION: Prairies, open woods, and sandy soil, Maine and Ontario to British Columbia, southward to Delaware, Ohio, Missouri, Louisiana, California, and Mexico; also in southern South America as far north as the mountains of Peru and in the temperate regions of the Eastern Hemisphere.

ILLUSTRATIONS: *Bull. U. S. Dep. Agr.* 772: f. 55; *Hitchc. Man. f.* 542.

2. *Koeleria phleoides* (Vill.) Pers. *Syn. Pl.* 1: 97. 1805.

Festuca phleoides Vill. *Fl. Delph.* 7. 1785.

Koeleria brachystachya DC. *Cat. Pl. Hort. Monsp.* 120. 1813. (Type from Europe.)

Lophochloa phleoides Reichenb. *Fl. Germ. Exc.* 42. 1830. (Based on *Festuca phleoides* Vill.)

Annual; culms erect or spreading, often branching at the base, glabrous, several-noded, 15-30 cm. tall; sheaths, especially the lower, somewhat pilose; ligule truncate, erose-dentate, pilose, 1-3 mm. long; blades flat, somewhat rounded or cordate at the base, pilose on the upper surface and sometimes also beneath; panicle pale, dense, spikelike, oblong or ovoid, obtuse, often somewhat narrowed above, 2-7 cm. long, the larger often lobed, the axis and very short branches glabrous, roughish; spikelets 2-4 mm. long, 4-5-flowered; glumes acute, rather broad, glabrous or pilose; lemmas short-awned from a bifid apex, roughened or pilose.

TYPE LOCALITY: Europe.

DISTRIBUTION: Introduced from Europe at Pensacola, Florida; Mobile, Alabama; Portland, Oregon; and at several points in California.

ILLUSTRATION: *Hitchc. Man. f.* 542 B.

126. *TRisetum* Pers. *Syn. Pl.* 1: 97. 1805.

Graphophorum Desv. *Nouv. Bull. Soc. Philom.* 2: 189. 1810. (Type species, *Aira melicoides* Michx.)

Rupestрина Provancher, *Fl. Can.* 689. 1862. (Type species, *R. pubescens* Provancher.)

Tufted perennials (except *T. interruptum*), with flat blades (except in *T. filifolium*) and open or usually contracted or spikelike shining panicles. Spikelets usually 2-flowered, sometimes 3-5-flowered, the rachilla prolonged behind the upper floret, usually villous; glumes somewhat unequal, acute, the second usually longer than the first floret; lemmas usually short-bearded at the base, 2-toothed at the apex, the teeth often awned, bearing from the back below the cleft apex a straight and included or usually bent and exerted awn (awnless in a few species).

Type species, *Avena flavescens* L. (selected as the historically oldest of 7 species included by Persoon).

Spikelets disarticulating below the glumes.

Plants annual.

Plants perennial.

Spikelets disarticulating above the glumes.

Blades involute, filiform.

Blades flat or loosely involute.

Awn included within the glumes or wanting.

Panicle rather dense, erect.

Panicle loose or open, nodding.

Lemmas compressed, glabrous except at the base, 5-6 mm.

long.

Lemmas rounded, scaberulous, pubescent, about 4 mm. long.

Awn exerted.

1. *T. interruptum*.

2. *T. pennsylvanicum*.

3. *T. filifolium*.

4. *T. Wolfii*.

5. *T. melicoides*.

6. *T. Pringlei*.

- Panicle dense, spikelike, sometimes interrupted below.
Lemmas and awn glabrous or nearly so.
Lemmas villous; awn somewhat plumose. 7. *T. spicatum*.
8. *T. Rosei*.
- Panicle loose and open to contracted, but not spikelike.
Awn straight, exerted. 9. *T. orthochaetum*.
Awn geniculate.
- Glumes about equal in length and width, narrow, 1-nerved;
hairs of the rachilla copious, about 3 mm. long. 10. *T. deyeuxioides*.
- Glumes more or less unequal; hairs of the rachilla less
copious; second glume more or less 3-nerved. 11. *T. irazuense*.
- Lemmas conspicuously papillose-roughened.
- Lemmas glabrous or scaberulous but not cross-wrinkled.
Culms stout, 1-2 meters tall; panicle large, rather
densely flowered, 15-30 cm. long; spikelets 3-
flowered or 4-flowered. 12. *T. Virletii*.
- Culms more slender and panicle smaller.
Rhizomes present. 13. *T. Tondusii*.
Rhizomes wanting.
- Florets distant, usually 3; panicle relatively
few-flowered, loose, lax or drooping, the
filiform branches naked below; first
glume much shorter and narrower than
the second. 14. *T. cernuum*.
- Florets approximate; panicle rather densely
many-flowered.
- Blades elongate, 1-2 mm. wide, flat or
usually involute. 15. *T. Palmeri*.
- Blades flat, usually more than 2 mm.
wide.
- Panicle narrow, the short branches or
some of them floriferous from
near the base; spikelets mostly
2-flowered.
- Panicle yellowish; spikelets mostly
3-flowered or 4-flowered; in-
troduced species. 16. *T. flavescens*.
- Panicle pale-green, sometimes
purplish; spikelets usually
2-flowered.
- Spikelets about 8 mm. long. 17. *T. canescens*.
Spikelets 5-6 mm. long. 18. *T. montanum*.
- Panicle larger and more open; spike-
lets mostly 3-flowered. 19. *T. viride*.

1. *Trisetum interruptum* Buckl. Proc. Acad. Phila.

1862: 100. 1862.

?*Calamagrostis longirostris* Buckl. Prel. Rep. Geol. & Agr. Surv. Tex. App. 2. 1866. (Type from Texas.)

Trisetum Hallii Scribn. Bull. Torrey Club 11: 6. 1884. (Type from Texas, *Hall 799* in part.)

Trisetum californicum Vasey, Bull. U. S. Dep. Agr. Bot. 13: no. 46. 1892. (Type from Baja California near the northern boundary, *Orcutt 1437*.)

Sphenopholis interrupta Scribn. Rhodora 8: 145. 1906. (Based on *Trisetum interruptum* Buckl.)

Sphenopholis interrupta californica Scribn. Rhodora 8: 146. 1906. (Based on *Trisetum californicum* Vasey.)

Sphenopholis Hallii Scribn. Rhodora 8: 146. 1906. (Based on *Trisetum Hallii* Scribn.)

Trisetum interruptum Hallii Hitchc. Proc. Biol. Soc. Wash. 41: 160. 1928. (Based on *T. Hallii* Scribn.)

Trisetum interruptum var. *californicum* Louis-Marie, Rhodora 30: 240. 1928. (Based on *T. californicum* Vasey.)

Annual; culms erect or spreading, usually branched at the base, scabrous-pubescent below the nodes, mostly with 2 or 3 nodes, 10-40 cm. tall; sheaths often scabrous or pubescent; ligule truncate, erose-dentate, about 2 mm. long; blades flat, sometimes pubescent, 1-4 mm. wide, mostly 3-10 cm. long; panicle narrow, interrupted, from slender to rather dense but scarcely spikelike, 5-12 cm. long, the axis scaberulous, the branches scabrous; pedicels disarticulating a short distance below the summit; spikelets about 5 mm. long, 2-flowered, the second floret sometimes rudimentary; glumes about equal in length, acute, 4-5 mm. long, the first 3-nerved, the second a little broader, 5-nerved; lemmas acuminate with 2 setaceous teeth, the awn attached above the middle, flexuous, 4-8 mm. long, that of the first lemma often shorter and straight.

TYPE LOCALITY: Texas.

DISTRIBUTION: Open dry ground, Texas to Colorado and Arizona; northern Baja California.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 162; Hitchc. Man. f. 566.

2. *Trisetum pennsylvanicum* (L.) Beauv.; R. & S. Syst. Veg.
2: 658. 1817.

Avena pennsylvanica L. Sp. Pl. 79. 1753.

?*Avena caroliniana* Walt. Fl. Car. 81. 1788. (Type from South Carolina.)

Avena palustris Michx. Fl. Bor. Am. 1: 72. 1803. (Type from Carolina and Georgia.)

Aira pallens var. *aristata* Muhl.; Ell. Bot. S. C. & Ga. 1: 151. 1816. (Type from South Carolina.)

Trisetum palustre Torr. Fl. U. S. 126. 1823. (Based on *Avena palustris* Michx.)

Arrhenatherum pennsylvanicum Torr. Fl. U. S. 130. 1823. (Based on *Avena pennsylvanica* L.)

Trisetum ludovicianum Vasey, Bull. Torrey Club 12: 6. 1885. (Type from Pointe à la Hache, Louisiana, Langlois.)

Sphenopholis palustris Scribn. Rhodora 8: 145. 1906. (Based on *Avena palustris* Michx.)

Sphenopholis palustris flexuosa Scribn. Rhodora 8: 143, 145. 1906. (Type from Wilmington, Delaware, Commons 274.)

Sphenopholis pennsylvanica Hitchc. Am. Jour. Bot. 2: 304. 1915. (Based on *Avena pennsylvanica* L.)

Sphenopholis pennsylvanica var. *flexuosa* Hubbard, Rhodora 18: 234. 1916. (Based on *S. palustris flexuosa* Scribn.)

Perennial; culms slender, weak, usually subgeniculate at the base, glabrous, 50–100 cm. tall; sheaths glabrous or rarely scabrous; ligule truncate, erose-dentate, 0.5–2 mm. long; blades flat, scabrous, rather lax, 2–5 mm. wide; panicle narrow, loose, nodding, 10–20 cm. long, the axis glabrous, the branches ascending or appressed, scabrous; pedicels tardily disarticulating about the middle or towards the base; spikelets 5–7 mm. long, 2-flowered, the long rachilla-joints slightly hairy; glumes 4–5 mm. long, acute, the second a little wider; lemmas acuminate, the first awnless, the second somewhat roughened, awned below the 2 setaceous teeth, the awn horizontally spreading, 4–5 mm. long.

TYPE LOCALITY: Pennsylvania (*Kalm*).

DISTRIBUTION: Swamps and wet places, Massachusetts to Ohio, southward on the coastal plain to Florida and westward to Tennessee and Louisiana.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 159; Hitchc. Man. f. 564.

3. *Trisetum filifolium* Scribn.; Beal, Grasses N. Am. 2: 375. 1896.

Trisetum filifolium var. *aristatum* Scribn.; Beal, Grasses N. Am. 2: 375. 1896. (Type from the Sierra Madre, Mexico, *Pringle 1430*.)

Perennial, pale or glaucous; culms loosely tufted, ascending from a more or less decumbent base, scabrous below the panicle, 50–100 cm. tall; sheaths scabrous, the lower numerous, marcescent; ligule truncate, scarcely erose, 1 mm. long or less; blades filiform, involute, scabrous, flexuous, mostly basal, 15–30 cm. long; panicle nodding, rather narrow, loose, 10–15 cm. long, the axis angled, scabrous, the branches capillary, scabrous, ascending or appressed, some of them floriferous only above the middle; spikelets 5–6 mm. long, about 3-flowered, rather turgid, the slender rachilla-joints villous; glumes rather broad, nearly equal in length and width, about 4 mm. long, glabrous; lemmas only slightly compressed, scaberulous, awnless or awned from about the middle; palea as long as or a little longer than the lemma.

TYPE LOCALITY: Sierra Madre, Chihuahua (*Pringle 1431*).

DISTRIBUTION: Upper altitudes, mountains of Chihuahua.

4. *Trisetum Wolfii* Vasey, Monthly Rep. U. S. Dep. Agr.
Feb. Mar. 156. 1874.

Trisetum subspicatum var. *muticum* Bolander; S. Wats. Bot. Calif. 2: 296. 1880. (Type from Upper Tuolumne, California, *Bolander 5019*.)

Trisetum Brandegei Scribn. Bull. Torrey Club 10: 64. 1883. (Type from Cascade Mountains, Brandege & Tweedy in 1882.)

Grapphorum Wolfii Vasey; Coult. Man. 423. 1885. (Based on *Trisetum Wolfii* Vasey.)

Trisetum muticum Scribn. Bull. U. S. Dep. Agr. Agrost. 11: 50. 1898. (Based on *Trisetum subspicatum* var. *muticum* Bolander.)

Grapphorum muticum A. Heller, Cat. N. Am. Pl. ed. 2. 31. 1900. (Presumably based on *Trisetum subspicatum* var. *muticum* Bolander.)

Trisetum Wolfii muticum Scribn. Rhodora 8: 88. 1906. (Based on *Trisetum subspicatum* var. *muticum* "Thurber".)

Grapphorum Brandegei Rydb. Fl. Rocky Mts. 61. 1917. (Based on *Trisetum Brandegei* Scribn.)

Trisetum Wolfii var. *Brandegei* Louis-Marie, Rhodora 30: 241. 1928. (Based on *Trisetum Brandegei* Scribn.)

Trisetum Wolfii var. *Brandegei* forma *muticum* Louis-Marie, Rhodora 30: 241. 1928. (Based on *T. muticum* Scribn.)

Perennial; culms erect, loosely tufted, sometimes with short rhizomes, glabrous, 50–100 cm. tall; sheaths scabrous, or rarely the lower pilose, 2 or 3 above the base; ligule truncate, ciliate, 1–2 mm. long; blades flat, mostly erect, scabrous, rarely pilose on the upper surface, usually rather short, 2–4 mm. wide; panicle erect, rather dense but scarcely spikelike, green or pale, sometimes purplish, 8–15 cm. long, the axis scabrous on the angles, the branches and pedicels scaberulous; spikelets 5–7 mm. long, 2-flowered, sometimes 3-flowered, the rachilla-joint about 2 mm. long, rather sparingly villous; glumes nearly equal, acuminate, about 5 mm. long; lemmas obtusish, scaberulous, 4–5 mm. long, awnless or with a minute awn below the tip, the callus-hairs scant, about 0.5 mm. long.

TYPE LOCALITY: Twin Lakes, Colorado (Wolf).

DISTRIBUTION: Meadows and moist ground, at medium altitudes in the mountains, Montana to Washington, and southward to New Mexico and California.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 11: f. 10; Bull. U. S. Dep. Agr. Agrost. 17: f. 496, 497; Hitchc. Man. f. 554.

5. *Trisetum melicoides* (Michx.) Vasey; Scribn. Bot. Gaz.

9: 169. 1884.

Aira melicoides Michx. Fl. Bor. Am. 1: 62. 1803.

?*Arundo airoides* Poir. in Lam. Encyc. 6: 270. 1804. (Type from North America, Michaux.)

Graphophorum melicoideum Desv. Nouv. Bull. Soc. Philom. 2: 189. 1810. (Based on *Aira melicoides* Michx.)

?*Deyeuxia airoides* Beauv. Agrost. 44, 152, 160. 1812. (Based on *Arundo airoides* "Michx.")

Poa melicoides Nutt. Gen. 1: 68. 1818. (Based on *Aira melicoides* Michx.)

Triodia melicoides Spreng. Syst. Veg. 1: 331. 1825. (Based on *Aira melicoides* Michx.)

?*Agrostis airoides* Rasp. Ann. Sci. Nat. 5: 449. 1825. (Based on *Deyeuxia airoides* Beauv.)

?*Calamagrostis airoides* Steud. Nom. Bot. ed. 2. 1: 249. 1840. (Based on *Arundo airoides* Poir.)

Dupontia Cooleyi A. Gray, Man. ed. 2. 556. 1856. (Type from Washington, Michigan, Cooley.)

Graphophorum melicoides var. *major* A. Gray, Proc. Am. Acad. 5: 191. 1861. (Based on *Dupontia Cooleyi* A. Gray.)

Graphophorum melicoideum Cooleyi Scribn. Mem. Torrey Club 5: 53. 1894. (Based on *Dupontia Cooleyi* A. Gray.)

Trisetum melicoideum Cooleyi Scribn. Rhodora 8: 87. 1906. (Based on *Dupontia Cooleyi* A. Gray.)

Trisetum melicoides var. *majus* Hitchc. in B. L. Robinson, Rhodora 10: 65. 1908. (Based on *Graphophorum melicoides* var. *major* A. Gray.)

Graphophorum Cooleyi Farwell, Papers Mich. Acad. Sci. 1: 88. 1923. (Based on *Dupontia Cooleyi* A. Gray.)

Perennial; culms solitary or few in a tuft, erect or a little decumbent at the base, glabrous, about 3-noded, 50–100 cm. tall; sheaths pilose or scabrous, the upper one very long; ligule thin, erose-dentate, ciliate, 1–3 mm. long; blades scabrous, sometimes pilose on the upper surface, 2–8 mm. wide; panicle somewhat open, nodding, pale, 10–20 cm. long, the axis slender, scabrous, the branches capillary, scabrous, laxly ascending, as much as 7 cm. long, distant but usually overlapping, some of them long-naked below, rather closely flowered above the middle, spikelets 6–7 mm. long, 2-flowered or 3-flowered; the hairs of the rachilla and callus 1–2 mm. long; glumes acute or acuminate, glabrous or nearly so, 4–6 mm. long, the second longer and broader; lemmas acute, scaberulous, often tinged with purple, 5–6 mm. long, rarely with a minute awn just below the tip.

TYPE LOCALITY: Canada.

DISTRIBUTION: River banks and lake shores, mostly in gravelly ground, Newfoundland to Vermont, Michigan, and Wisconsin.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 279; Hitchc. Man. f. 552.

6. *Trisetum Pringlei* (Scribn.) Hitchc. Proc. Biol. Soc. Wash.

40: 82. 1927.

Graphophorum Pringlei Scribn.; Beal, Grasses N. Am. 2: 561. 1896.

Perennial; culms tufted, slender, erect, glabrous, 2-noded, the lower node near the base, 25–50 cm. tall; upper sheath glabrous, the lower more or less pubescent, sometimes densely so; ligule truncate, rather firm, scaberulous, minutely ciliate; blades mostly basal, one about the middle of the culm, flat, folded, or loosely involute, more or less pubescent or pilose, stiffish and sharp-pointed, mostly not more than 10 cm. long, 1–2 mm. wide; panicle lax, open, nodding,

5-15 cm. long, the axis smooth, slender, the branches capillary, flexuous, in distant whorls of 2 or 3, spreading or drooping, as much as 5 cm. long, spikelet-bearing above the middle, usually with 1 or 2 short branches at base; spikelets usually purple, about 5 mm. long, 2-flowered, rather slender or narrow, the slender rachilla about 1.5 mm. long, villous; glumes unequal, scabrous on the keels, the first narrow, 2-2.5 mm. long, the second wider, 3 mm. long; lemmas narrow, rounded on the back, scabrous-pubescent, awless, the first about 3.5 mm. long.

TYPE LOCALITY: Summit of Sierra de San Felipe, Oaxaca (Pringle 4765).

DISTRIBUTION: Southern Mexico to Panama.

7. *Trisetum spicatum* (L.) K. Richt. Pl. Eur. 1: 59. 1890.

Aira spicata L. Sp. Pl. 64. 1753. Not *A. spicata* L. *op. cit.* 63, this changed by Linnaeus, in the errata at the end of the second volume of the same work, to *A. indica*,
Aira subspicata L. Syst. Nat. ed. 10: 2: 873. 1759. (Based on *A. spicata* L. Sp. Pl. 64. 1753, the diagnosis copied.)

Avena airoides Koeler, Descr. Gram. 298. 1802. (Based on *Aira subspicata* L.)

Avena mollis Michx. Fl. Bor. Am. 1: 72. 1803. (Type from Canada.) Not *A. mollis* Salisb. 1796, nor *A. mollis* Koeler, 1802.

Avena subspicata Clairv. Man. 17. 1811.

Trisetum subspicatum Beauv. Agrost. 88, 149, 180. 1812. (Based on *Aira subspicata* L.)

Avena elongata H.B.K. Nov. Gen. & Sp. 1: 148. 1815. (Type from near Mexico City.)

Avena toluensis H.B.K. Nov. Gen. & Sp. 1: 148. 1815. (Type from Toluca, Mexico.)

?*Melica triflora* Bigel. New Engl. Jour. Med. 5: 334. 1816. (Type from Mount Washington, New Hampshire, Boott.)

Trisetaria airoides Baumg. Enum. Stirp. Transsilv. 3: 265. 1816. (Based on *Avena airoides* Koeler.)

Trisetum airoides Beauv.; R. & S. Syst. Veg. 2: 666. 1817. (Based on *Avena airoides* Koeler.)

Trisetarium elongatum Poir. in Lam. Encyc. Suppl. 5: 366. 1817. (Based on *Avena elongata* H.B.K.)

Trisetarium toluense Poir. in Lam. Encyc. Suppl. 5: 366. 1817. (Based on *Avena toluensis* H.B.K.)

?*Avena squarrosa* Schrank, Denks. Bot. Ges. Regensb. 1^o: 7. 1818. (Type from Labrador.)

Trisetum molle Kunth, Rév. Gram. 101. 1829. (Based on *Avena mollis* Michx.)

Trisetum elongatum Kunth, Rév. Gram. 101. 1829. (Based on *Avena elongata* H.B.K.)

Trisetum toluense Kunth, Rév. Gram. 101. 1829. (Based on *Avena toluensis* H.B.K.)

Koeleria subspicata Reichenb. Fl. Germ. Exc. 49. 1830. (Based on *Aira subspicata* L.)

Trisetum labradoricum Steud. Syn. Gram. 228. 1854. (Type from Labrador.)

Trisetum groenlandicum Steud. Syn. Gram. 228. 1854. (Type from Greenland.)

Trisetum subspicatum var. *molle* A. Gray, Man. ed. 2: 572. 1856. (Based on *Avena mollis* Michx.)

Rupestrina pubescens Prov. Fl. Can. 689. 1862. (Based on *Avena mollis* Michx.)

Trisetum subspicatum var. *laxius* Lange, Consp. Fl. Groenl. 164. 1880. (Type from Greenland.)

Trisetum subspicatum var. *villosum* Lange, Consp. Fl. Groenl. 164. 1880. (Type from Greenland.)

Deyeuxia gracilis Fourn. Mex. Pl. Gram. 106. 1886. (Type from Mirador, Mexico, Liebmann 602.)
 Not *Trisetum gracile* Boiss. 1845.

Trisetum nivosum Fourn. Mex. Pl. Gram. 107. 1886. (Type from Nevado de Toluca, Mexico.)

Trisetum interruptum Fourn. Mex. Pl. Gram. 108. 1886. (Type from Mexico, Liebmann 605, 606, 607, being cited.) Not *T. interruptum* Buckl. 1863.

Trisetum spicatum var. *molle* Beal, Grasses N. Am. 2: 377. 1896. (Based on *Avena mollis* Michx.)

Trisetum Brittonii Nash, Bull. N. Y. Bot. Gard. 1: 437. 1900. (Type from Marquette, Michigan, Britton in 1883.)

Trisetum alaskanum Nash, Bull. N. Y. Bot. Gard. 2: 155. 1901. (Type from Skagway, Alaska, Williams in 1899.)

Trisetum Congdoni Scribn. & Merr. Bull. Torrey Club 29: 470. 1902. (Type from Mariposa Co., California, Congdon.)

Trisetum americanum Gand. Bull. Soc. Bot. Fr. 49: 182. 1902. (Localities cited, Colorado, and Idaho.)

Trisetum majus Rydb. Bull. Colo. Agr. Exp. Sta. 100: 34. 1906. (Type from Pen Gulch, Colorado, Vasey in 1884.)

Avena spicata O. & B. Fedtsch. Acta Hort. Petrop. 28: 76. 1908. (Based on *Aira spicata* L.)
 Not *Avena spicata* L. 1753.

Trisetum spicatum var. *pilosigulme* Fernald, Rhodora 18: 195. 1916. (Type from Newfoundland, Fernald, Wiegand, & Bartram 4593.)

Trisetum spicatum var. *laxius* O. Holmberg, Skand. Fl. 2: 175. 1926. (Based on *T. subspicatum* var. *laxius* Lange.)

Trisetum disjunctum Louis-Marie, Rhodora 30: 218. 1928. (Based on *T. interruptum* Fourn. 1886, not Buckl. 1863.)

Trisetum humile Louis-Marie, Rhodora 30: 244. 1928. (Based on *Deyeuxia gracilis* Fourn.)

Trisetum spicatum var. *alaskanum* Maltz; Louis-Marie, Rhodora 30: 239. 1928. (Based on *T. alaskanum* Nash.)

Trisetum spicatum var. *Brittonii* Louis-Marie, Rhodora 30: 239. 1928. (Based on *Trisetum Brittonii* Nash.)

Trisetum spicatum var. *Congdoni* Hitchc. Proc. Biol. Soc. Wash. 41: 160. 1928. (Based on *Trisetum Congdoni* Scribn. & Merr.)

Trisetum spicatum var. *nivosum* Louis-Marie, Rhodora 30: 239. 1928. (Based on *T. nivosum* Fourn.)

Trisetum spicatum var. *villosissimum* Louis-Marie, *Rhodora* 30: 239. 1928. (Based on *T. subspicatum* var. *villosissimum* Lange.)
Trisetum albidum Sodiro, *Revista Col. Nac. Vic. Rocaf.* 12: 84, 86. 1930. (Type from Ecuador.)
Trisetum gracile Sodiro, *Revista Col. Nac. Vic. Rocaf.* 12: 84, 85. 1930. (Type from Ecuador.)
 Not *T. gracile* Boiss. 1845.

Perennial; culms densely tufted, erect, glabrous to puberulent, 15–50 cm. tall; sheaths puberulent or, especially in the southern part of our range, glabrous; ligule truncate, erose-dentate, 1–2 mm. long; blades flat or loosely involute, usually more or less puberulent, mostly 1–2 mm. wide; panicle dense, usually spikelike, often interrupted at base, pale-purple or often dark-purple, 5–15 cm. long, the axis and branches pubescent; spikelets 4–6 mm. long, the rachilla-joint shortly appressed-pilose, a little more than 1 mm. long, the callus-hairs very short; glumes somewhat unequal in length, glabrous or scabrous on the back, or sometimes pilose, the keels scabrous or ciliate, the first narrow, acuminate, 1-nerved, the second broader, acute, 3-nerved; lemmas glabrous or scaberulous, 5 mm. long, the first longer than the glumes, the teeth setaceous; awn attached about one third below the tip, 5–6 mm. long, geniculate, exerted, flexuous at the base.

TYPE LOCALITY: Lapland.

DISTRIBUTION: Alpine meadows and slopes, arctic America, southward to Connecticut, Pennsylvania, northern Michigan, and Minnesota; Roan Mountain, North Carolina; and in the mountains to New Mexico and California; the high mountains of Mexico and Central America; Hispaniola; also southward in the Andes to the antarctic regions and in the arctic and alpine regions of the Old World.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. *Agrost.* 7: f. 160; Hitchc. *Man. f.* 559.

8. *Trisetum Rosei* Scribn. & Merr. *Contr. U. S. Nat. Herb.* 8: 289. 1905.

Trisetum Rosei tenerum Scribn. & Merr. *Contr. U. S. Nat. Herb.* 8: 289. 1905. (Type from Popocatepetl, Mexico.)
Trisetum Rosei f. *tenerum* Louis-Marie, *Rhodora* 30: 239. 1928. (Based on *T. Rosei tenerum* Scribn. & Merr.)

Perennial; culms densely tufted, puberulent to densely pubescent, 25–50 cm. tall; sheaths glabrous or puberulent; ligule rounded, erose, about 2 mm. long; blades loosely involute, erect, glabrous or puberulent, rather firm or leathery, sharp-pointed, 1–2 mm. wide; panicle rather loosely spikelike, more or less interrupted, mostly 5–10 cm. long, the axis and branches densely villous; spikelets 4–6 mm. long, the rachilla-joint villous, about 1 mm. long; glumes glabrous or a little scaberulous, rather prominently ciliate on the keels, rather broad, the second a little broader and a little longer; lemmas densely villous all over, the callus-hairs not distinguishable from the hairs above, the awn spreading, exerted, somewhat plumose.

TYPE LOCALITY: Mount Popocatepetl, Mexico (*Rose 6016*).

DISTRIBUTION: Alpine regions of the high mountains of southern Mexico.

9. *Trisetum orthochaetum* Hitchc. *Am. Jour. Bot.* 21: 134. 1934.

Perennial; culms solitary, erect, slender, 110 cm. tall; sheaths glabrous; blades flat, scabrous, 8–20 cm. long, 3–7 mm. wide; panicle slightly nodding, lax, pale, about 18 cm. long, the filiform branches loosely ascending, naked below, the lower fascicled, as much as 8 cm. long; spikelets short-pedicled, somewhat appressed, mostly 3-flowered, 8–9 mm. long excluding the awns, the rachilla appressed-silky; glumes acuminate, about 6 mm. long, the second one wider; lemmas rounded on the back, minutely scaberulous on the upper part, obscurely 5-nerved, the callus short-pilose, the apex acute, erose-toothed, awned about 2 mm. below the tip, the awn straight or nearly so, exceeding the lemma about 3 mm.

TYPE LOCALITY: Lolo Hot Springs, Bitterroot Mountains, Montana (*Chase 5129*).

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Hitchc. *Man. f.* 556.

10. *Trisetum deyeuxioides* (H.B.K.) Kunth, Rév. Gram.

102. 1829.

Avena deyeuxioides H.B.K. Nov. Gen. & Sp. 1: 147. 1815.*Trisetarium deyeuxioides* Poir. in Lam. Encyc. Suppl. 5: 366. 1817. (Based on *Avena deyeuxioides* H.B.K.)*Avena trichopodia* Presl, Rel. Haenk. 1: 254. 1830. (Type from Mexico.)*Deyeuxia triflora* Nees, Linnaea 19: 691. 1847. (Based on *Avena deyeuxioides* H.B.K.)

Perennial; culms erect or decumbent at base, glabrous, 3-5-noded below the middle, 60-120 cm. tall; sheaths glabrous or scabrous; ligule thin, truncate, erose, 2-3 mm. long; blades flat, scabrous, 2-5 mm. wide; panicle narrow, rather dense, nodding, more or less lobed or interrupted, 10-20 cm. long, the axis glabrous or scaberulous, the branches scabrous, ascending, mostly floriferous from near the base; spikelets 5-6 mm. long, mostly 2-flowered, the rachilla-joints about 1.5 mm. long, copiously villous on the upper part, the hairs 2-3 mm. long, the callus sharp, densely short-pilose; glumes narrow, acuminate, scabrous at least on the keel, the second similar to the first; lemmas narrow, rounded on the back, incurved on the margins, glabrous or slightly scaberulous, about 5 mm. long; awn attached just above the middle, geniculate, spreading, the lower part flexuous or twisted.

TYPE LOCALITY: Lake Texcoco, Mexico [State].

DISTRIBUTION: Ditches, banks of streams, and wet places, Mexico to Ecuador.

Trisetum deyeuxioides var. *pubescens* Scribn.; Beal, Grasses N. Am. 2: 374. 1896. *Deyeuxia evoluta* Fourn. Bull. Soc. Bot. Fr. 24: 181. 1877. (Type from Mirador, Mexico.) *Trisetum evolutum* Hitchc. Contr. U. S. Nat. Herb. 17: 325. 1913. (Based on *Deyeuxia evoluta* Fourn.) Sheaths pubescent. TYPE LOCALITY: Patzcuaro, Michoacan (*Pringle 3950*). DISTRIBUTION: Mexico to Salvador.

11. *Trisetum irazuense* (Kuntze) Hitchc. Proc. Biol. Soc.

Wash. 40: 82. 1927.

Trisetum gracile Fourn. Mex. Pl. Gram. 108. 1886. (Type from La Joya, Mexico, *Liebmann 613*.) Not *T. gracile* Boiss. 1845.*Calamagrostis irazuensis* Kuntze, Rev. Gen. 763. 1891. (Type from Irazu, Costa Rica, *Kuntze*.) *Trisetum Fournierianum* Hitchc. Contr. U. S. Nat. Herb. 17: 326. 1913. (Based on *T. gracile* Fourn.)*Trisetum scabriflorum* Hitchc. Contr. U. S. Nat. Herb. 24: 358. 1927. (Type from Colombia, *Pittier 1435*.)

Perennial; culms lax, more or less decumbent or spreading, glabrous; ligule erose-dentate, about 1 mm. long; blades flat, sparsely pilose on both surfaces, mostly 2-3 mm. wide; panicle narrow, somewhat loose and interrupted, nodding, greenish or purplish, 15-20 cm. long, the branches ascending, rather lax, some of them floriferous to the base, the longer as much as 5 cm. long; spikelets 2-flowered or 3-flowered, 5-8 mm. long, the florets extending above the glumes, the rachilla-joints long-pilose, 1-2 mm. long; glumes scabrous on the keels, mostly on the upper half, or toward the apex only, the first rather narrow, acuminate, 1-nerved, 4-5 mm. long, the second broader and rather abruptly acuminate, 3-nerved, 5-6 mm. long; lemmas compressed, lanceolate, slightly toothed, obscurely 5-nerved, scabrous all over the back and somewhat wrinkled or roughened, the lower 5-6 mm. long, the others a little shorter, the callus hairs about 0.5 mm. long; awn inserted one third below the apex, loosely twisted and flexuous for about 2 mm., the terminal part spreading, 5-7 mm. long; palea a little shorter than the lemma.

TYPE LOCALITY: Mount Irazu, Costa Rica.

DISTRIBUTION: Pastures and páramos, altitude 2000-3000 meters, southern Mexico to Ecuador.

12. *Trisetum Virletii* Fourn. Mex. Pl. Gram. 108. 1886.*Trisetum bambusifforme* Fourn. Mex. Pl. Gram. 108. 1886. (Type from Valley of Mexico, *Bourgeau 1304*.)

Perennial; culms stout, many-noded, as much as 7 mm. thick near base, 1-2 meters tall, glabrous or scaberulous, often bearing fascicled short branches at the nodes; sheaths scaberulous, the lower bladeless; ligule rounded, dentate, scaberulous, as much as 5 mm. long; blades

flat, very scabrous, sometimes sparsely pilose on the upper surface, elongate, as much as 1 cm. wide, tapering to a long fine point; panicle large, many-flowered, rather dense but spreading, 15-30 cm. long, 10-15 cm. wide, the capillary branches scabrous, numerous in fascicles, naked below, as much as 12 cm. long, branching; spikelets 3-flowered or 4-flowered, sometimes 2-flowered, 5-8 mm. long, the hairs of the rachilla 2 mm. long, the callus-hairs short; glumes scabrous on the keels and nerves, the first 3-4 mm. long, 1-nerved, the second longer and broader, 3-nerved; lemmas scabrous, acute, about 5 mm. long, the nerves rather faint, scarcely excurrent; awn attached about 2 mm. below the scarcely bifid tip, spreading, exerted, scabrous.

TYPE LOCALITY: San Luis Potosí (*Virlet 1384*).

DISTRIBUTION: Open woods and cool mountain slopes, altitude 2000-3000 meters, San Luis Potosí to southern Mexico.

13. *Trisetum Tonduzii* Hitchcock, sp. nov.

Perennial, with creeping rhizomes; culms erect, cespitose, glabrous, 2-noded or 3-noded near the base, 30-40 cm. tall, sometimes taller; sheaths glabrous; ligule truncate or rounded, dentate, about 1 mm. long, the margin of the sheath on one side extending upward as an auricle as long as the ligule; blades mostly basal, erect, rather stiff, glabrous, loosely involute, ending in a slender point, 5-15 cm. long, 2-3 mm. wide; panicle ovate-pyramidal, open, purplish, 5-15 cm. long, sometimes nearly as wide, the axis glabrous, the branches slender, verticillate, spreading, glabrous, naked below, the verticils mostly 2-3 cm. apart, the branchlets short and somewhat appressed along the upper part of the branches, the shorter pedicels 1-2 mm. long; spikelets 2-flowered, 4-5 mm. long; the rachilla villous, the hairs at the summit as much as 2 mm. long, the callus-hairs also about 2 mm. long; glumes rather broad, equal in length, nearly equal in width, glabrous even on the keel, acute, about 4 mm. long; lemmas scaberulous, 4-4.5 mm. long, the nerves excurrent as 4 short slender teeth; awn attached a little above the middle, very slightly scabrous, curved or loosely spiral at base and sharply spreading horizontally, 5-8 mm. long.

Planta perennis, rhizomata; culmi erecti, glabri, 30-40 cm. alti; vaginae glabrae; ligula truncata, dentata, 1 mm. longa; laminae glabrae, plerumque paullum involutae, 2-3 mm. latae, apice attenuatae; panicula pyramidalis, patens, 5-15 cm. longa, ramis verticillatis, patulis, glabris, inferne nudis; spiculae 2-florae, 4-5 mm. longae, pilis rachillae et calli 2 mm. longis; glumae aequales, glabrae, acutae, 4 mm. longae; lemmata scaberula, 4-4.5 mm. longa, apice quadriseta, paullum supra medium aristata, arista geniculata, inferne laxae torta, superne patula, 5-8 mm. longa.

Type collected in pastures on Mount Poás, Costa Rica, altitude 2460 meters, November 1896, A. Tonduz, Herb. Inst. Phys.-geogr. Costa Rica no. 10749 (U. S. Nat. Herb. no. 358711).

DISTRIBUTION: Open grassland, high mountains of Costa Rica.

NOTE: Two specimens (Las Nubes, *Standley 38398*, and Poás, *Pittier 2954* in part) are lax, the blades scattered along the culm, sparsely pilose on the upper surface, and the sheaths sometimes appressed-hispid.

14. *Trisetum cernuum* Trin. Mém. Acad. St.-Pétersb. VI.

I: 61. 1830.

Avena nutkaensis Presl, Rel. Haenk. 1: 254. 1830. (Type from Nootka Sound, Vancouver Island, Haenke.)

Avena cernua Kunth, Rév. Gram. Suppl. XXVI. 1830. (Based on *Trisetum cernuum* Trin.)

Trisetum Sandbergii Beal, Grasses N. Am. 2: 378. 1896. (Type from Mount Stuart, Washington, Sandberg & Leiber 823.)

Trisetum nutkaense Scribn. & Merr.; Davy, Univ. Calif. Publ. Bot. 1: 63. 1902. (Based on *Avena nutkaensis* Presl.)

Trisetum cernuum var. *luxurians* Louis-Marie, Rhodora 30: 213. 1928. (Type from Seaside, Oregon, Shear & Scribner 1705.)

Trisetum cernuum var. *luxurians* f. *pubescens* Louis-Marie, Rhodora 30: 213. 1928. (Type from Eureka, California.)

Trisetum cernuum var. *Sandbergii* Louis-Marie, Rhodora 30: 214. 1928. (Based on *T. Sandbergii* Beal.)

Trisetum cernuum f. *pubescens* G. N. Jones, Univ. Wash. Publ. Biol. 5: 108. 1936. (Based on *T. cernuum* var. *luxurians* f. *pubescens* Louis-Marie.)

Perennial; culms rather lax, glabrous, often scaberulous below the panicle, 60-120 cm. tall; sheaths glabrous, scabrous, or sparsely pilose; ligule truncate, erose-dentate, 2-4 mm.

long; blades thin, flat, lax, scabrous, 6-12 mm. wide; panicle open, lax, drooping, 15-30 mm. long, the axis more or less scabrous, the branches verticillate, filiform, flexuous, scabrous, spreading or drooping, spikelet-bearing toward the ends; spikelets 6-12 mm. long, with usually 3 distant florets, the first longer than the second glume, the slender curved rachilla-joints nearly 2 mm. long, villous, the hairs of the callus 0.5-1 mm. long; first glume narrow, acuminate, 1-nerved, 0.5-2 mm. long, the second broad, 3-nerved, 3-4 mm. long, occasionally reduced; lemmas glabrous or slightly scaberulous, 5-6 mm. long, the teeth setaceous; awn slender, curved, flexuous or loosely spiral, mostly 5-10 mm. long, attached 1-2 mm. below the tip.

TYPE LOCALITY: Sitka, Alaska.

DISTRIBUTION: Moist woods, Alberta to southeastern Alaska, and southward to western Montana and northern California.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 164; Hitchc. Man. f. 557.

15. *Trisetum Palmeri* Hitchc. Contr. U. S. Nat. Herb.

17: 325. 1913.

Culms caespitose, slender, glabrous, 60-100 cm. tall; sheaths glabrous or somewhat scabrous; ligule 3-4 mm. long; blades elongate, nearly or quite equaling the panicle, 1-3 mm. wide, soon involute, scabrous; panicle loose, narrow, 10-20 cm. long, the branches several in rather distant whorls, ascending, the shorter ones spikelet-bearing nearly to the base, the longer 5 cm. long, naked below; spikelets, excluding the awns, 5-6 mm. long, 2-flowered, the rachilla prolonged as a plumose bristle; glumes about 4 mm. long, narrow, tapering to an acute apex, green along the midnerve, the margins scarious, glabrous except the scabrous keel, the first 1-nerved, the second 3-nerved; lemmas about 4 mm. long, rounded on the back, 5-nerved, scabrous, scarious-tipped, the apex erose, obtuse, 2-lobed, the awns of both lemmas geniculate, 5-6 mm. long, exerted, attached about the middle; palea slightly exceeding the lemma; callus and rachilla-joints pilose with short hairs, the prolongation of the rachilla about one third as long as the upper floret.

TYPE LOCALITY: Otinapa, Durango (Palmer 342).

DISTRIBUTION: Durango (Palmer 128, 342, 3550) and Jalisco (Ynez Mexia 1659).

16. *Trisetum flavescens* (L.) Beauv. Agrost. 88, 153, 180. 1812.

Avena flavescens L. Sp. Pl. 80. 1753.

Trisetum pratense Pers. Syn. Pl. 1: 97. 1805. (Type from Europe.)

Trisetaria flavescens Baumg. Enum. Stirp. Transsilv. 3: 263. 1816. (Based on *Avena flavescens* "Schreb.")

Perennial; culms solitary or few in a tuft, erect or decumbent at base, glabrous, sometimes pilose at or below the nodes, 30-60 cm. tall; sheaths glabrous or sometimes with a few weak hairs; ligule truncate, erose-dentate, 1-2 mm. long; blades flat, scabrous beneath, more or less pilose on the upper surface, scabrous on the margin, 3-7 mm. wide; panicle narrow, rather loose, many-flowered, yellowish, 10-20 cm. long, the axis smooth or somewhat scabrous above, the branches verticillate, scabrous, rather distant but overlapping, flexuous; spikelets mostly 3-4-flowered, 6-8 mm. long, usually golden-yellow, the rachilla villous; glumes glabrous except the keel, the first narrow, 1-nerved, 4 mm. long, the second broader, 3-nerved, about 6 mm. long; lemma glabrous or scaberulous, about 4 mm. long; awn attached above the middle of the lemma, geniculate-spreading, the lower part flexuous or twisted.

TYPE LOCALITY: Europe.

DISTRIBUTION: Introduced in a few places from Vermont to Missouri and California; native of Europe.

ILLUSTRATION: Hitchc. Man. f. 563.

TRisetum aureum (Ten.) Ten. Fl. Napol. 2: 378. 1820. *Koeleria aurea* Ten. Cors. Bot. Lec. 1: 58. 1806. Annual; culms 10-20 cm. tall; panicle ovate, contracted, 2-3 cm. long; spikelets 3 mm. long; awns 2-3 mm. long. TYPE LOCALITY: Europe. DISTRIBUTION: Ballast, Camden, New Jersey; native of southern Europe.

17. *Trisetum canescens* Buckl. Proc. Acad. Phila. 1862: 100. 1863.

Trisetum cernuum var. *canescens* Beal, Grasses N. Am. 2: 380. 1896. (Based on *T. canescens* Buckl.)
Trisetum canescens f. *tonsum* Louis-Marie, Rhodora 30: 216. 1928. (Type from Trinity Co., California, Yates 522.)

Trisetum canescens f. *velutinum* Louis-Marie, Rhodora 30: 216. 1928. (Type from Lassen's Peak, California.)

Trisetum projectum Louis-Marie, Rhodora 30: 217. 1928. (Type from Fresno Co., Calif., Hall & Chandler 359.)

Perennial, culms erect or decumbent at the base, glabrous, 60–120 cm. tall; sheaths, at least the lower, sparsely to densely and softly retrorse-pilose, rarely scabrous only; ligule scaberulous, truncate, erose-dentate, ciliate, 1–2 mm. long; blades flat, scabrous or canescent, sometimes sparsely pilose, mostly 2–7 mm. wide; panicle narrow, usually loose and somewhat nodding, sometimes interrupted and spikelike, 10–25 cm. long, the axis scabrous, the branches verticillate, some longer and naked below, some short ones intermixed, sometimes all short, making the panicle narrow and interrupted; spikelets about 8 mm. long, 2-flowered or 3-flowered, the florets not so distant as in *T. cernuum*, the rachilla strongly villous; glumes smooth except the keel, the first narrow, 1-nerved, acuminate, the second broad, acute, 3-nerved, 5–7 mm. long; lemmas rather firm, scaberulous, the upper exceeding the glumes, 5–6 mm. long, the teeth aristate; awn geniculate, spreading, loosely twisted below, attached one third below the tip, usually about 12 mm. long.

TYPE LOCALITY: Columbia plains, Oregon (Nuttall).

DISTRIBUTION: Mountain meadows, moist ravines, and along streams, Montana to British Columbia, and southward to central California.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 163; Hitchc. Man. f. 559 B.

NOTE: Plants with less pubescent sheaths and looser panicles resemble *T. cernuum*, but in that species the spikelets are commonly 3-flowered and the florets distant. Plants with velvety foliage and narrow panicles with short densely flowered branches, the lower in distant fascicles, have been differentiated as *T. projectum*. Intergrading specimens are more numerous than those of the extreme described.

18. *Trisetum montanum* Vasey, Bull. Torrey Club 13: 118. 1886.

Trisetum argenteum Scribn. Bull. U. S. Dep. Agr. Agrost. 11: 49. 1898. (Type from Silverton, Colorado, Shear 1214.) Not *T. argenteum* R. & S. 1817.

Trisetum Shearii Scribn. Circ. U. S. Dep. Agr. Agrost. 30: 8. 1901. (Based on *T. argenteum* Scribn.)
Grappheporum Shearii Rydb. Bull. Torrey Club 32: 602. 1905. (Based on *Trisetum Shearii* Scribn.)

Trisetum canescens var. *montanum* Hitchc. Proc. Biol. Soc. Wash. 41: 160. 1928. (Based on *T. montanum* Vasey.)

Trisetum montanum var. *pilosum* Louis-Marie, Rhodora 30: 212. 1928. (Type from Caroles, New Mexico, Standley 4536.)

Trisetum montanum var. *Shearii* Louis-Marie, Rhodora 30: 213. 1928. (Based on *T. Shearii* Scribn.)

Perennial; culms erect or decumbent at the base, glabrous, 50–100 cm. tall; sheaths glabrous or scabrous, or the lower sometimes more or less pilose; ligule truncate, erose-dentate, somewhat ciliate, 2–3 mm. long; blades flat, scabrous; panicle narrow, rather dense, pale or purplish, 10–15 cm. long, rarely longer, the axis scaberulous, the branches scabrous; spikelets 5–6 mm. long; glumes and lemmas thinner than in *T. canescens*, the second glume about 4 mm. long; lemmas scaberulous, the lower one about 5 mm. long; awn attached below the tip, spreading from near the base, not twisted, delicate, about 5 mm. long.

TYPE LOCALITY: Las Vegas, New Mexico (G. R. Vasey in 1881).

DISTRIBUTION: Mountain meadows, gulches, and moist places on mountain slopes, altitude 2000–3000 meters, Colorado, Utah, and New Mexico.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 161; Hitchc. Man. f. 562.

NOTE: The form differentiated as *T. montanum* var. *Shearii* has purplish panicles and erect awns only 2–3 mm. long. It is known only from the type collection. (ILLUSTRATION: Bull. U. S. Dep. Agr. Agrost. 11: f. 8.)

19. *Trisetum viride* (H.B.K.) Kunth, Rév. Gram. 101. 1829.

Avena viridis H.B.K. Nov. Gen. & Sp. 1: 147. 1815.

Trisetarium viride Poir. in Lam. Encyc. Suppl. 5: 366. 1817. (Based on *Avena viridis* H.B.K.)

Deyeuxia viridis Fourn. Bull. Soc. Bot. Fr. 24: 181. 1877. (Based on *Trisetum viride* Kunth.)

Trisetum paniculatum Fourn. Mex. Pl. Gram. 109. 1886. (Cumbre de Istepec, southern Mexico, Liebmann 597, nos. 568 and 598 also cited.)

Perennial, culms erect, simple, glabrous, 1-1.5 meters tall; sheaths striate, the upper scaberulous; ligule 2-4 mm. long; blades flat, glabrous beneath, somewhat pilose on the upper surface, scabrous on the margin; panicle subverticillate, spreading, 15-25 cm. long, somewhat nodding at the apex, the axis and branches scabrous; spikelets 3-flowered, the rachilla white-pilose, the callus-hairs in a short dense tuft; glumes about equal, linear, narrow, keeled, green, glabrous, scabrous on the keel, about as long as the spikelet; lemma lanceolate, 5-nerved at the apex, the nerves extending into 4 short slender teeth, scabrous on the back; awn attached about the middle of the lemma, flexuous or loosely twisted on the lower part, the upper part spreading.

TYPE LOCALITY: Between Salamanca and Queretaro, Mexico.

DISTRIBUTION: Southern Mexico.

127. PEYRITSCHIA Fourn. Mex. Pl. Gram. 109. 1886.

Perennial erect grasses with narrow, elongate, contracted panicles. Spikelets 2-flowered, the rachilla produced beyond the second floret; glumes subequal, longer than the 2 florets; lemmas narrow, glabrous, minutely 2-lobed, the lobes obtuse; awn, if present, short, attached below the sinus of the lobes of the lemma.

Type species, *Aira koelerioides* Peyr.

1. *Peyritschia koelerioides* (Peyr.) Fourn. Mex. Pl. Gram.

110. 1886.

Aira koelerioides Peyr. *Linnaea* 30: 5. 1859.

Deschampsia koelerioides Benth. *Jour. Linn. Soc.* 19: 96. 1881. (Based on *Aira koelerioides* Peyr.)
Not *D. koelerioides* Regel, 1868.

Grapphorum altijugum Fourn. Mex. Pl. Gram. 111. 1886. (Type from Mount Orizaba, Mexico, Liebmann 603.)

Trisetum altijugum Scribn. *Rhodora* 8: 89. 1906. (Based on *Grapphorum altijugum* Fourn.)

Culms tufted, erect, glabrous, 30-60 cm. tall; sheaths glabrous; ligule obtuse, 1-2 mm. long; blades flat, scabrous, 4-8 cm. long, 3-4 mm. wide; panicle pale, elongate, linear, contracted, densely flowered, more or less interrupted, 10-20 cm. long, the axis angled, somewhat scabrous, the branches short, erect; spikelets 2-flowered, the rachilla more or less pilose; glumes subequal, minutely scabrous on the keels, acute, 3.5-5 mm. long; lemmas narrow, glabrous, the first about 3-3.5 mm. long, minutely bilobed, the lobes obtuse, awnless or with a straight somewhat divergent awn attached about 0.5 mm. below the summit, the second lemma similar to the first but a little shorter.

TYPE LOCALITY: Toluca, Mexico, altitude 2600 meters (Heller 311).

DISTRIBUTION: Open woods at high altitudes, mountains of southern Mexico.

128. DESCHAMPSIA Beauv. *Agrost.* 91. 1812.

Campella Link. *Hort. Berol.* 1: 122. 1827. (Type species, *C. caespitosa* Link.)

Vahlodea Fries, *Bot. Notiser* 1842: 141, 178. 1842. (Type species, *Aira atropurpurea* Wahl.)

Avenella Parl. *Fl. Ital.* 1: 244. 1848. (Type species, *Aira flexuosa* L.)

Lerchenfeldia Schur, *Enum. Pl. Transsilv.* 753. 1866. (Type species, *Aira flexuosa* L.)

Podionapus Dulac, *Fl. Hautes-Pyr.* 82. 1867. (Type species, *P. caespitosus* Dulac.)

Erioblastus Honda, *Jour. Fac. Sci. Univ. Tokyo Bot.* 3: 142. 1930. (Type species, *E. flexuosa* Honda.)

Low or moderately tall annuals or usually perennials, with shining pale or purplish spikelets in narrow or open panicles. Spikelets 2-flowered, disarticulating above the glumes and between the florets, the hairy rachilla prolonged beyond the upper floret as a stipe, this sometimes bearing a reduced floret; glumes about equal, acute or acutish, membranaceous; lemmas thin, truncate and 2-4-toothed at the summit, bearded at the base, bearing a slender awn from or below the middle, the awns straight, bent or twisted.

Type species, *Aira caespitosa* L.

NOTE: *Aira* L. has been applied to this genus by some botanists who have typified it by *Aira caespitosa*. In the present work *Aira* is typified by *A. praecox* L.

- Plants annual. Foliage very scant. 1. *D. danthonioides*.
 Plants perennial. 2. *D. Pringlei*.
 Panicle dense, spikelike, more or less lobed or interrupted.
 Panicle sometimes narrow but not spikelike.
 Panicle narrow, elongate, the distant branches appressed; blades filiform, lax. 3. *D. elongata*.
 Panicle open or contracted, if narrow, not more than one fourth as long as the culm. 4. *D. atropurpurea*.
 Blades flat, thin.
 Blades firm or filiform.
 Awns geniculate.
 Awn twisted below the bend. 5. *D. flexuosa*.
 Awn somewhat flexuous below the bend but not twisted. 6. *D. domingensis*.
 Awns straight or somewhat curved, not geniculate.
 Culms robust, usually 1 meter tall or more, panicle many flowered, condensed. 7. *D. holciformis*.
 Culms more slender or lower; panicle open and many-flowered or, if narrow, few-flowered.
 Blades filiform, lax or soft. 8. *D. Liebmanniana*.
 Blades firm, flat, folded or involute.
 Lemmas glabrous.
 Spikelets 4-5 mm. long (6-7 mm. in var. *arctica*); panicles many-flowered. 9. *D. caespitosa*.
 Spikelets 6-7 mm. long; panicle relatively few-flowered. 10. *D. mackenziana*.
 Lemmas scabrous on the upper half. 11. *D. straminea*.

1. *Deschampsia danthonioides* (Trin.) Munro; Benth. Pl. Hartw. 342. 1857.

Aira danthonioides Trin. Mém. Acad. St.-Pétersb. VI. 1: 57. 1830.

Deschampsia calycina Presl, Rel. Haenk. 1: 251. 1830. (Type from Monterey, California, *Haenke*.)

Aira calycina Steud. Syn. Pl. Gram. 220. 1854. (Based on *Deschampsia calycina* Presl.)

Trisetum glabrum Buckl. Proc. Acad. Phila. 1862: 100. 1862. (Type said to be from "Texas," but probably from Columbia River.)

Deschampsia gracilis Vasey, Bot. Gaz. 10: 224. 1885. (Type from San Diego, California, *Orcutt* 1072.)

Deschampsia danthonioides var. *gracilis* Munz, Man. S. Calif. Bot. 45, 597. 1935. (Based on *D. gracilis* Vasey.)

Annual; culms slender, erect, glabrous, 15-60 cm. tall; sheaths glabrous, striate; ligule pointed, 3-4 mm. long; blades few, short, scaberulous, flat or more or less involute, mostly less than 1 mm. wide; panicles open, 7-25 cm. long, the axis slender, scabrous, the capillary branches commonly in twos, stiffly ascending, distant, naked below, bearing a few short-pediceled spikelets toward the ends; glumes narrow, 3-nerved, acuminate, glabrous except the slightly scabrous keel, much exceeding the florets, 4-8 mm. long; lemmas smooth and shining, turgid, somewhat indurate, 2-3 mm. long, the base of the florets and the rachilla pilose; awn from below the middle of the lemma, more or less geniculate, 4-6 mm. long, the lower part brown, twisted.

TYPE LOCALITY: Western North America.

DISTRIBUTION: Open ground, Alaska to Montana and Baja California.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 157; Hitchc. Man. f. 568.

NOTE: Variable in the size of the spikelets. A form described from southern California as *D. gracilis* Vasey (*D. danthonioides* var. *gracilis* Munz), with somewhat laxer panicles, the rather more numerous spikelets only 4-5 mm. long, grades into the usual form.

2. *Deschampsia Pringlei* Scribn. Proc. Acad. Phila. 1891: 300. 1891.

Perennial; culms caespitose, erect or somewhat decumbent at the base, rather slender, glabrous, 30-100 cm. tall; sheaths glabrous or slightly roughened; ligules truncate, the lower short, the uppermost as much as 4 mm. long; blades flat or becoming involute, scabrous, those of the innovations slender or filiform, those of the culm as much as 3 mm. wide; panicle spikelike, more or less interrupted or lobed, tapering above, pale or purplish, 10-15 cm. long, sometimes as much as 20 cm., the axis scabrous, the branches appressed; glumes acuminate, scabrous on the keel, exceeding the 2 florets, 4-5 mm. long; lemmas narrow, rounded on the back, the lower about 3 mm. long, the upper a little smaller, short-pilose on the callus, the rachilla-joint

minutely pilose, 0.5 mm. long; awns geniculate, attached above the base of the lemma, twisted below, divergent and straight above.

TYPE LOCALITY: Base of the Sierra Madre, Chihuahua (*Pringle 1429*).

DISTRIBUTION: Wet places and rocky hills, Chihuahua to Puebla and Toluca.

ILLUSTRATION: Proc. Acad. Phila. 1891: *pl. 13, f. 1*.

3. *Deschampsia elongata* (Hook.) Munro; Benth. Pl. Hartw.

342. 1857.

Aira elongata Hook. Fl. Bor. Am. 2: 243. 1840.

Deyouzia Schaffneri Fourn. Bull. Soc. Bot. Fr. 24: 181. 1877; Mex. Pl. Gram. 107. 1886. (Type from Mount Orizaba, *Schaffner 94*.)

Deschampsia elongata var. *ciliata* Vasey; Beal, Grasses N. Am. 2: 371. 1896. (Type from Santa Cruz, California, *Anderson*.)

Deschampsia elongata var. *tenuis* Vasey; Beal, Grasses N. Am. 2: 372. 1896. (Type from Santa Cruz, California, *Jones 2201*.)

Deschampsia ciliata Rydb. Fl. Rocky Mts. 60. 1917. (Based on *D. elongata* var. *ciliata* Vasey.)

Aira vaseyana Rydb. Fl. Rocky Mts. ed. 2. 1112. 1922. (Based on *Deschampsia elongata* var. *ciliata* Vasey.)

Perennial; culms densely tufted, slender, erect, glabrous, 30–120 cm. tall; sheaths glabrous, striate; ligules acute, about 5 mm. long; blades soft, flat or folded, glabrous or scaberulous, 1–1.5 mm. wide, those of the basal tuft filiform; panicle narrow, as much as 30 cm. long, the axis scabrous, the capillary branches appressed, rather loosely flowered; glumes 3-nerved, acuminate, usually somewhat exceeding the florets, minutely scabrous, 4–6 mm. long; lemmas 2–3 mm. long, similar to those of *D. danthonioides*, the awns shorter, straight, the callus-hairs half as long as the lemma, the rachilla-joint pilose.

TYPE LOCALITY: Columbia River (*Douglas*).

DISTRIBUTION: Open ground, Alaska to Wyoming, and southward to Arizona, California, and northern Mexico; also in Chile.

ILLUSTRATIONS: Hook. Fl. Bor. Am. 2: *pl. 228*; Bull. U. S. Dep. Agr. Agrost. 7: *f. 156*; Hitchc. Man. *f. 570*.

4. *Deschampsia atropurpurea* (Wahl.) Scheele, Flora 27: 56. 1844.

Aira atropurpurea Wahl. Fl. Lapp. 37. 1812.

Avena atropurpurea Link. Hort. Berol. 1: 119. 1827. (Based on *Aira atropurpurea* Wahl.)

Holcus atropurpureus Wahl. Sv. Bot. *pl. 687*. 1828. (Based on *Aira atropurpurea* Wahl.)

Aira latifolia Hook. Fl. Bor. Am. 2: 243. 1840. (Type from Rocky Mountains, *Drummond*.)

Vahlodea atropurpurea Fries, Summa Veg. Scand. 243. 1845. (Based on *Aira atropurpurea* Wahl.)

Deschampsia latifolia Vasey, Grasses U. S. 29. 1883. (Based on *Aira latifolia* Hook.) Not *D. latifolia* Hochst. 1851.

Deschampsia Hookeriana Scribn. Bot. Gaz. 11: 97. 1886. (Based on *Aira latifolia* Hook.)

Deschampsia atropurpurea var. *minor* Vasey, Bull. Torrey Club 15: 48. 1888. (Type from Vancouver Island, *Macoun* in 1887.)

Deschampsia atropurpurea var. *latifolia* Scribn.; Macoun, Cat. Can. Pl. 2: 209. 1888. (Based on *Aira latifolia* Hook.)

Erioblastus flexuosus Honda, Jour. Fac. Sci. Univ. Tokyo Bot. 3: 143. 1930. (Type from Japan.)

Vahlodea flexuosa Ohwi, Acta Phytotax. 2: 33. 1933. (Based on *Erioblastus flexuosus* Honda.)

Perennial; culms loosely tufted, erect, purplish at the base, glabrous, 40–80 cm. tall; sheaths glabrous; ligule rounded, dentate, 3 mm. long; blades flat, thin, ascending or appressed, glabrous or slightly scaberulous, acute or abruptly acuminate, 5–10 cm. long, 4–6 mm. wide; panicle loose, open, nodding, 5–10 cm. long, the axis glabrous or nearly so, the few capillary branches scabrous, drooping, mostly in two's, naked below; spikelets mostly purplish, broad; glumes broad, acute, 5 mm. long, exceeding the florets, the second 3-nerved; lemmas scabrous or glabrous, about 2.5 mm. long, the callus-hairs about half as long, the rachilla-joint pilose, 0.7 mm. long; awn attached about the middle of the lemma, that of the lower straight or nearly so and included, that of the upper geniculate, exerted.

TYPE LOCALITY: Lapland.

DISTRIBUTION: Woods and meadows, Newfoundland and Labrador to Alaska, and southward to the White Mountains, Colorado, and Oregon; also in northern Eurasia.

ILLUSTRATIONS: Hook. Fl. Bor. Am. 2: *pl. 227*; Bull. U. S. Dep. Agr. Agrost. 7: *f. 158*; Hitchc. Man. *f. 572*.

5. *Deschampsia flexuosa* (L.) Trin. Mém. Acad. St.-Pétersb. VI.
4²: 9. 1836.

Aira flexuosa L. Sp. Pl. 65. 1753.

Deschampsia alba R. & S. Syst. Veg. 2: 688. 1817. (Type from Greenland.)

Avena flexuosa Schrank, Denks. Bot. Ges. Regensb. 1²: 7. 1818. (Ex description. Type from Labrador.)

Avena flexuosa Mert. & Koch, in Roehl, Deuts. Fl. ed. 3. 1: 570. 1823. (Based on *Aira flexuosa* L.)

Avenella flexuosa Parl. Fl. Ital. 1: 246. 1848. (Based on *Aira flexuosa* L.)

Lerchenfeldia flexuosa Schur, Enum. Pl. Transsilv. 753. 1866. (Based on *Aira flexuosa* L.)

Podionapus flexuosus Dulac, Fl. Hautes-Pyr. 83. 1867. (Based on *Deschampsia flexuosa* Trin.)

?*Aira flexuosa* var. *glomerata* Lange, Consp. Fl. Groenland 162. 1880. Greenland.

Salmasia flexuosa Bubani, Fl. Pyren. 4: 319. 1901. (Based on *Aira flexuosa* L.)

Perennial; culms densely tufted, erect or decumbent at the base, slender, glabrous, or scabrous just below the panicle, 30–80 cm. tall; sheaths glabrous or scabrous; ligule notched or lobed, much wider than the base of the blade, decurrent, 0.5 mm. long on the innovations, as much as 3 mm. long on the culm; blades filiform, mostly basal, involute or folded, sulcate, flexuous, glabrous or scaberulous; panicle open, nodding, 5–12 cm. long, the axis slender, scabrous, the branches capillary, scabrous, ascending, flexuous, naked at the base, spikelet-bearing toward the end; spikelets 4–5 mm. long, purplish or bronze, the florets approximate; glumes glabrous, acute, 1-nerved, a little shorter than the florets, the second longer than the first; lemmas scabrous, the callus-hairs about 1 mm. long, the awn attached near the base, geniculate, twisted below, exerted above, 5–7 mm. long.

TYPE LOCALITY: Europe.

DISTRIBUTION: Dry or rocky woods, slopes, and open ground, Greenland to Alaska, and southward to North Carolina, Michigan, and Wisconsin; Le Flore County, Oklahoma; also in Eurasia.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 155; Hitchc. Man. f. 574.

NOTE: *Deschampsia nitida* Presl, Rel. Haenk. 1: 251. 1830, described from "Mexico," was probably collected by Haenke in Chile, which he visited, since it agrees with specimens from Chile. The localities ascribed to several of Haenke's collections have proved to be erroneous.

6. *Deschampsia domingensis* Hitchc. & Ekman, Misc. Pub.
U. S. Dep. Agr. 243: 67. 1936.

Perennial; culms tufted, erect, 60–90 cm. tall, from slender creeping rhizomes; sheaths glabrous, pale, somewhat papery; ligules membranaceous, acuminate, 8 mm. long; shorter on the innovations; blades folded or involute, glabrous, elongate, laxly upright, flexuous, mostly less than 1 mm. wide when folded; panicle open, 10–20 cm. long, the branches capillary, flexuous, scabrous, spreading, usually naked for half their length or more, the lower as much as 10 cm. long or more; spikelets on capillary pedicels, somewhat aggregate toward the ends of the branchlets; callus-hairs 0.5–2 mm. long, rather scant, the rachilla pilose; glumes 5–6 mm. long; lemmas 2.5–4 mm. long, thin, 4-toothed at the summit, the teeth acuminate, the two outer 0.5 mm. long; awn from near the base of the lemma, geniculate, the straight segment above the bend about 5 mm. long; palea as long as the lemma.

TYPE LOCALITY: Los Vallecitos del Yaque, Province of Azua, Cordillera Central, Dominican Republic (*Ekman H 13633 b*).

DISTRIBUTION: Moist places, high mountains of the Dominican Republic.

ILLUSTRATION: Misc. Pub. U. S. Dep. Agr. 243: f. 37.

7. *Deschampsia holciformis* Presl, Rel. Haenk. 1: 251. 1830.

Aira holciformis Steud. Syn. Gram. 221. 1854. (Based on *Deschampsia holciformis* Presl.)

Perennial; culms in dense tufts with numerous basal leaves, erect, relatively robust, glabrous, or scabrous below the panicle, 50–125 cm. tall, usually 1 meter or more; sheaths glabrous; ligules firm, pointed, 5 mm. long or on the innovations only 2–3 mm.; blades mostly folded or involute, rather firm, glabrous on the under surface, scabrous on the upper surface and on the margins, sharp-pointed, as much as 50 cm. long, 1–4 mm. wide; panicle condensed, many-flowered, 10–25 cm. long, purplish, brownish, or bronze, more or less lobed or interrupted, the axis scabrous, the branches short, appressed, closely flowered; spikelets 6–8 mm. long, the glumes and lemmas scaberulous, the glumes about as long as the spikelet or shorter, 3-nerved,

the lateral nerves of the first often obscure; lemmas awned from near the middle, the awn straight, erect, a little longer than the spikelet, the callus-hairs about 1 mm. long.

TYPE LOCALITY: Monterey, California.

DISTRIBUTION: Marshes and sandy soil near the coast, Vancouver Island to central California.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 154; Hitchc. Man. f. 578.

8. *Deschampsia Liebmanniana* (Fourn.) Hitchc. Contr. U. S. Nat. Herb. 17: 323. 1913.

Deyeuxia Liebmanniana Fourn. Bull. Soc. Bot. Fr. 24: 181. 1877; Mex. Pl. Gram. 106. 1886.

Perennial; culms rather loosely tufted, erect from a decumbent base, glabrous, 40–60 cm. tall; sheaths glabrous or the upper scaberulous; ligules pointed, thin, the upper 5 mm. long; blades slender or filiform, sulcate, lax, mostly in a basal tuft, glabrous or somewhat scaberulous; panicle open, nodding or drooping, 10–20 cm. long, the axis glabrous below, scabrous above, the capillary branches mostly in two's, distant, scabrous, flexuous or drooping, naked below, bearing a few spikelets toward the ends; glumes about equal, 3-nerved, 5–6 mm. long, glabrous except the keel of the second; lemmas turgid, glabrous, about 3 mm. long, the summit obtuse, 4-toothed, the callus-hairs more than half as long as the lemma, the hairs of the rachilla 1 mm. long, the prolongation prominent.

TYPE LOCALITY: Mount Orizaba, Mexico (*Liebmann 610*).

DISTRIBUTION: Wet places, in the high mountains of southern Mexico.

9. *Deschampsia caespitosa* (L.) Beauv. Agrost. 91, 149, 160. 1812.

Aira caespitosa L. Sp. Pl. 64. 1753.

Aira alpina L. Sp. Pl. 65. 1753. (Type from Europe.)

Agrostis caespitosa Salisb. Prodr. 25. 1796. (Based on *Aira caespitosa* L.)

Aira ambigua Michx. Fl. Bor. Am. 1: 61. 1803. (Type from Canada.)

Aira caespitosa var. *ambigua* Pursh, Fl. Am. Sept. 77. 1814. (Based on *A. ambigua* Michx.)

Deschampsia alpina R. & S. Syst. Veg. 2: 686. 1817. (Based on *Aira alpina* L.)

Deschampsia brevifolia R. Br. Chlor. Melv. 33. 1823. (Type from Melville Island, Arctic America.)

Aira aristulata Torr. Fl. U. S. 132. 1824. (Type from New York.)

Aira arctica Spreng. Syst. 4²: (Cur. Post.) 32. 1827. (Based on *Deschampsia brevifolia* R. Br.)

Campella caespitosa Link, Hort. Berol. 1: 122. 1827. (Based on *Aira caespitosa* L.)

?*Aira vivipara* Steud. Syn. Gram. 222. 1854. (Type from Greenland.)

Aira caespitosa var. *arctica* Thurber; A. Gray, Proc. Acad. Phila. 1863: 78. 1863. (Based on *Deschampsia brevifolia* R. Br.)

Podionapus caespitosus Dulac, Fl. Hautes-Pyr. 82. 1867. (Based on *Deschampsia caespitosa* Beauv.)

Avena caespitosa Kuntze, Taschen-fl. Leipz. 45. 1867. (Based on *Aira caespitosa* L.)

Aira major subsp. *caespitosa* Syme, Engl. Bot. ed. 3. 11: 64. 1873. (Based on *Aira caespitosa* L.)

Aira caespitosa var. *montana* Vasey, in Rothr. Bot. Wheeler's Surv. 6: 294. 1878. (Specimens cited from Utah, Colorado, and Arizona.) Not *A. caespitosa* var. *montana* Reichenb. 1850.

Deschampsia caespitosa var. *maritima* Vasey, Bull. Torrey Club 15: 48. 1888. (Type from Vancouver Island, Macoun in 1887.)

?*Deschampsia caespitosa* var. *strictior* Kurtz, Bot. Jahrb. 19: 421. 1894. (Type from Alaska, Krause Bros. 435.)

Deschampsia caespitosa var. *alpina* Vasey; Beal, Grasses N. Am. 2: 368. 1896. (Localities cited, Alaska and Colorado.) Not *D. caespitosa* var. *alpina* Gaudin, 1869.

Deschampsia caespitosa var. *confinis* Vasey; Beal, Grasses N. Am. 2: 369. 1896. (Type from Southern California, Palmer 231 in 1888.)

Deschampsia caespitosa var. *longiflora* Beal, Grasses N. Am. 2: 369. 1896. (Type from Vancouver Island.)

Deschampsia brachyphylla Nash, in Rydb. Mem. N. Y. Bot. Gard. 1: 37. 1900. (Based on *D. brevifolia* R. Br.) Not *D. brachyphylla* Phil. 1896.

Deschampsia curtifolia Scribn. Circ. U. S. Dep. Agr. Agrost. 30: 7. 1901. (Based on *D. brachyphylla* Nash.)

Deschampsia arctica Merrill, Rhodora 4: 143. 1902. (Based on *Aira arctica* Spreng.)

Deschampsia alpicola Rydb. Bull. Torrey Club 32: 601. 1905. (Based on *D. caespitosa* var. *alpina* Vasey.)

Deschampsia confinis Rydb. Bull. Torrey Club 36: 533. 1909. (Based on *D. caespitosa* var. *confinis* Vasey.)

Deschampsia pungens Rydb. Bull. Torrey Club 39: 103. 1912. (Type from Banff, Alberta, McCalla 2309.)

Aira curtifolia Rydb. Fl. Rocky Mts. ed. 2. 1112. 1922. (Based on *Deschampsia curtifolia* Scribn.)

Aira alpicola Rydb. Fl. Rocky Mts. ed. 2. 1112. 1922. (Based on *Deschampsia alpicola* Rydb.)

Aira pungens Rydb. Fl. Rocky Mts. ed. 2. 1112. 1922. (Based on *Deschampsia pungens* Rydb.)

Perennial; culms in dense tufts, leafy at the base, erect, glabrous, 60–120 cm. tall, or in arctic and alpine regions dwarf; sheaths glabrous; ligules acuminate, mostly 4–7 mm. long, or shorter on the innovations; blades often elongate (short in arctic forms), rather firm, flat or folded or more or less involute, scabrous on the upper surface, 1.5–4 mm. wide; panicle pale to dark-purple, loose, open, nodding, 10–25 cm. long (erect and contracted in arctic forms), the axis and capillary branches scabrous, spikelet-bearing toward the ends; spikelets 4–5 mm. long, the florets distant, the rachilla-joint half as long as the lower floret; glumes 1-nerved or the second obscurely 3-nerved, acute, about as long as the florets; lemmas smooth, the callus-hairs short; awn from near the base of the lemma, from straight and included to curved or somewhat bent and twice as long as the spikelet.

TYPE LOCALITY: Europe.

DISTRIBUTION: Bogs and wet places, Greenland to Alaska, southward to New Jersey, West Virginia, Illinois, North Dakota, New Mexico, and California; also arctic and temperate regions of the Old World.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 6: *pl. 14*; Hitchc. Man. *f. 576*.

NOTE: Variable in habit, foliage, and size of spikelets. In the arctic regions small forms are found which have received specific names. Many varieties have been described, as shown by the synonymy. Arctic forms are sometimes proliferous, especially in Greenland. In dwarf forms the awn may be much reduced and attached higher up on the lemma, or absent altogether.

Deschampsia caespitosa var. *arctica* Vasey, Bull. U. S. Dep. Agr. Bot. 13: no. 45. 1892. ?*Deschampsia beringensis* Hultén, Sv. Vet. Akad. Handl. III. 5: 107. 1927. (Type from Bering Island, *Sandberg*.) Differing from *D. caespitosa* in the larger spikelets, 5–7 mm. long, with longer hairs on the callus and rachilla-joints, and mostly longer awns. TYPE LOCALITY: "Alaska and adjacent islands," the type from St. Paul Island (*Merriam* in 1891). DISTRIBUTION: Aleutian Islands, islands of the Bering Sea and Alaska coast. ILLUSTRATION: Bull. U. S. Dep. Agr. Bot. 13: *pl. 45*. NOTE: Intergrades with the usual form. This variety was described by Scribner & Merrill (Contr. U. S. Nat. Herb. 13: 62. 1910) under the name *D. botnica* (Wahl.) Trin., a species confined to Europe. Specimens named *D. beringensis* by Hultén agree with var. *arctica* but do not fully agree with Hultén's description.

10. *Deschampsia mackenzieana* Raup, Jour. Arnold Arb.

17: 205. 1936.

Perennial; culms tufted, erect, glabrous, 30–80 cm. tall; sheaths glabrous, the lower crowded, rather loose and papery, as much as 10–12 cm. long; ligule acute, 3–5 mm. long; blades involute, glabrous, 8–15 cm. long, 1–3 mm. wide; panicle long-exserted, loose, open, 12–30 cm. long, the branches few, capillary, glabrous, 5–8 cm. long, spreading or drooping, naked at the base; spikelets somewhat appressed, 6–7 mm. long, 1-flowered or 2-flowered, the rachilla-joint about half as long as the lower floret; glumes equal, acuminate, the first 1-nerved, the second 3-nerved; lemmas smooth, the summit erose, the callus-hairs and those of the rachilla longer than in *D. caespitosa*; awn from about one third above the base, nearly straight, exceeding the lemma 2–3 mm.

TYPE LOCALITY: South shore of Lake Athabasca, near Wolverine Point (*Raup 6707*).

DISTRIBUTION: Sand beaches and dunes, Lake Athabasca, Saskatchewan.

ILLUSTRATION: Jour. Arnold Arb. 17: *pl. 190*.

11. *Deschampsia straminea* Hitchc. Contr. U. S. Nat. Herb.

17: 323. 1913.

Perennial; culms cespitose, sometimes decumbent or rhizomatous at base, glabrous, 20–35 cm. tall; leaves mostly basal, stramineous, shining, glabrous except the margins of the blades; sheaths loose and papery; ligule about 1 cm. long, thin; blades involute, somewhat spongy in texture, pungent-pointed, 5–10 cm. long, or the uppermost shorter; panicle purple, ovoid in outline, 7–12 cm. long, open, the lower branches in two's or three's, 2–5 cm. long, slender, flexuous, spreading, smooth; spikelets somewhat crowded toward the ends of the branches, 2-flowered, the rachilla produced as a hairy bristle; glumes equal, about 7 mm. long, acute, narrowed below, broadest about the middle, glabrous, slightly scabrous on the keels above, more or less 3-nerved, purple, yellowish toward the apex; lemmas thin, glabrous, 4 mm. long, 5-nerved, 4-toothed at the thin or erose apex, the awn attached just above the base, straight,

slightly exceeding the lemma; callus and rachilla-joint long-pilose, the hairs 2 mm. long, the prolongation of the rachilla about half the length of the lemma.

TYPE LOCALITY: Alpine region, Mount Ixtacchuatl (*Purpus* 1619).

DISTRIBUTION: Known only from Mount Ixtacchuatl and Mount Orizaba (*Purpus* 3018), Mexico.

129. AIRA L. Sp. Pl. 63. 1753.

Aspris Adans. Fam. Pl. 2: 496, 522. 1763. (Type species, *Aira praecox* L.)

Caryophyllea Opiz, Seznam 27. 1852. (Type species, *Aira caryophyllea* L.)

Fussia Schur, Enum. Pl. Transsilv. 754. 1866. (Type species, *Aira praecox* L.)

Airella Dumort. Bull. Soc. Belg. 7: 68. 1868. (Type species, *A. caryophyllea* Dumort.)

Delicate annuals with lax subfiliform blades and open or contracted panicles of small spikelets. Spikelets 2-flowered, disarticulating above the glumes, the rachilla not prolonged; glumes boat-shaped, about equal, 1-nerved or obscurely 3-nerved, acute, membranaceous or subscarios; lemmas firm, rounded on the back, tapering into 2 slender teeth, bearing on the back below the middle a slender, geniculate, twisted, usually exerted awn, this sometimes wanting in the lower floret or reduced; callus minutely bearded.

Type species, *Aira praecox* L.

Panicle dense, spikelike.

Panicle open.

Lower floret with an awn as long as that of the upper floret.

Lower floret awnless or nearly so.

1. *A. praecox*.

2. *A. caryophyllea*.

3. *A. capillaris*.

1. *Aira praecox* L. Sp. Pl. 65. 1753.

Agrostis praecox Salisb. Prodr. 24. 1796. (Based on *Aira praecox* L.)

Avena praecox Beauv. Agrost. 89, 154. 1812. (Based on *Aira praecox* L.)

Trisetum praecox Dum. Obs. Gram. 122. 1823. (Based on *Aira praecox* L.)

Airopsis praecox Fries, Mant. 3: 180. 1842. (Based on *Aira praecox* L.)

Caryophyllea praecox Opiz, Seznam 27. 1852. (Based on *Aira praecox* L.)

Fussia praecox Schur, Enum. Pl. Transsilv. 754. 1866. (Based on *Aira praecox* L.)

Airella praecox Dumort. Bull. Soc. Bot. Belg. 7: 68. 1868. (Based on *Aira praecox* L.)

Salmasia praecox Bubani, Fl. Pyren. 4: 316. 1901. (Based on *Aira praecox* L.)

Aspris praecox Nash, in Britt. & Brown, Ill. Fl. ed. 2. 1: 215. 1913. (Based on *Aira praecox* L.)

Culms tufted, usually erect, glabrous, 10–20 cm. tall; sheaths glabrous, striate; ligule pointed, thin, scaberulous, 2–3 mm. long; blades flat, folded, or more or less involute, scaberulous, mostly 1–3 cm. long and less than 1 mm. wide; panicle narrow, dense, 1–3 cm. long, the axis scaberulous, the branches short, scabrous, appressed; spikelets green or yellowish; glumes compressed, acute, scaberulous, 3.5–4 mm. long, a little longer than the florets; lemmas acuminate, scaberulous toward the bisetose summit, about 3 mm. long, the callus-hairs very short; awn attached about 0.7 mm. above the base of the lemma, geniculate, the lower part brown and twisted, the upper part yellow and straight, about 2 mm. long.

TYPE LOCALITY: Europe.

DISTRIBUTION: Sandy open ground along the coast, New Jersey to Virginia; Vancouver to California; also in Europe.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 153; Hitchc. Man. f. 579.

2. *Aira caryophyllea* L. Sp. Pl. 66. 1753.

Avena caryophyllea Wiggers, Prim. Fl. Holsat. 10. 1780. (Based on *Aira caryophyllea* L.)

Agrostis caryophyllea Salisb. Prodr. 25. 1796. (Based on *Aira caryophyllea* L.)

Airopsis caryophyllea Fries, Mant. 3: 180. 1842. (Based on *Aira caryophyllea* L.)

Caryophyllea airoides Opiz, Seznam 27. 1852. (Based on *Aira caryophyllea* L.)

Fussia caryophyllea Schur, Enum. Pl. Transsilv. 754. 1866. (Based on *Aira caryophyllea* L.)

Airella caryophyllea Dumort. Bull. Soc. Bot. Belg. 7: 68. 1868. (Based on *Aira caryophyllea* L.)

Salmasia vulgaris Bubani, Fl. Pyren. 4: 316. 1901. (Based on *Aira caryophyllea* L.)

Aspris caryophyllea Nash, in Britt. & Brown, Ill. Fl. ed. 2. 1: 214. 1913. (Based on *Aira caryophyllea* L.)

Culms solitary or in small tufts, erect, very slender, glabrous, 10–30 cm. tall; sheaths slightly retrorse-scaberulous; ligule pointed, lacerate, 5 mm. long; blades glabrous or scaberulous, very narrow, short; panicle open, 2–7 cm. long, the axis angled, glabrous or scaberulous, the branches capillary, ascending or spreading, scabrous, the spikelets clustered toward the

ends; glumes broad, rather abruptly acute, very finely scabrous on the keel, the margins finely toothed, about 3 mm. long; lemmas about three fourths as long as the glumes, acute, bisetose, both awned from below the middle, the awn geniculate, about 3 mm. long.

TYPE LOCALITY: Europe.

DISTRIBUTION: Open dry ground on the coastal plain, Massachusetts to Florida and Louisiana; Ohio; common on the Pacific Coast from British Columbia to California; also in southern South America, Europe, and Africa.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 152; Hitchc. Man. f. 581.

3. *Aira capillaris* Host, Gram. Austr. 4: 20. 1809.

Avena capillaris Mert. & Koch, in Roehl, Deuts. Fl. ed. 3. 1: 573. 1823. (Based on *Aira capillaris* Host.)

Airopis capillaris Schur, Oesterr. Bot. Zeits. 9: 328. 1859. (Based on *Aira capillaris* Host.)

Fuscia capillaris Schur, Enum. Pl. Transsilv. 754. 1866. (Based on *Aira capillaris* Host.)

Airella capillaris Dumort. Bull. Soc. Bot. Belg. 7: 68. 1868. (Based on *Aira capillaris* Host.)

Aspris capillaris Hitchc. Bull. U. S. Dep. Agr. 772: 116. 1920. (Based on *Aira capillaris* Host.)

Culms slender, erect or geniculate at the base, glabrous, 7-35 cm. tall; sheaths retrorsely scabrous; ligule acute, 2-3 mm. long; blades very narrow, lax, scaberulous; panicle open, as much as 10 cm. long, sometimes nearly as broad, the very slender axis glabrous below, the capillary branches and branchlets spreading; glumes broad, acute or mucronate, 1.5 mm. long; first lemma awnless, acute; second lemma bisetose, awned from below the middle, the awns geniculate, 2 mm. long.

TYPE LOCALITY: Europe.

DISTRIBUTION: Open ground on the Coastal Plain, rare, Maryland to Florida and Texas; Oregon and California; also in the Mediterranean region.

ILLUSTRATIONS: Abrams, Ill. Fl. Pacif. St. 1: f. 375; Hitchc. Man. f. 583.

130. AVENA L.,¹ Sp. Pl. 79. 1753; Gen. Pl. ed. 5. 34. 1754.

Helictotrichon Bess.; Schultes, in R. & S. Syst. Veg. Mant. 3: Addit. 1: 526. 1827. (Type species, *Avena sempervirens* Host.)

Avena section *Avenastrum* Koch, Syn. Fl. Germ. 795. 1837. (Type species, *Avena pubescens* Huds.)

Avenastrum Jessen, Deutschl. Gräser 214. 1863. (Based on *Avena* sect. *Avenastrum* Koch.)

Heuffelia Schur, Enum. Pl. Transsilv. 760. 1866. (Based on *Avena* sect. *Avenastrum* Koch.)

Avenula Dumort. Bull. Soc. Belg. 7: 68. 1868. (Type species, *Avena pubescens* Huds.)

Annals or perennials with open or narrow, relatively few-flowered panicles of large spikelets. Spikelets 2-several-flowered, the rachilla bearded, disarticulating above the glumes and between the florets; glumes about equal, membranaceous or papery, mostly several-nerved, longer than the lower floret, usually exceeding the upper floret; lemmas indurate, except toward the summit, 5-9-nerved, bidentate at the apex, bearing a dorsal bent and twisted awn (awn straight and reduced in *Avena sativa*).

Type species, *Avena sativa* L.

Plants annual; spikelets nodding.

Plants perennial; spikelets erect.

Section 1. *Euavena*.

Section 2. *Avenastrum*.

Section 1. EUAVENA Griseb.

Teeth of lemma acute, not setaceous.

Spikelets mostly 2-flowered, the florets not readily separating; lemmas glabrous; awn usually straight or obsolete.

Spikelets mostly 3-flowered, the florets readily separating; lemmas conspicuously hispid below; awn stout, twisted, geniculate.

Glumes about 2-2.5 cm. long; awn 3-4 cm. long.

Glumes 3.5-4.5 cm. long; awn 5-7 cm. long.

Teeth of lemma setaceous.

1. *A. sativa*

2. *A. fatua*.

3. *A. sterilis*.

4. *A. barbata*.

Section 2. AVENASTRUM Koch

Blades flat or folded; panicle 5-15 cm. long.

Sheaths, at least the lower, and the blades pubescent.

Sheaths and blades glabrous.

Blades involute; panicle 2-5 cm. long.

5. *A. pubescens*.

6. *A. Hookeri*.

7. *A. Mortoniana*.

¹ Genera 130 to 136 by Agnes Chase.

1. *Avena sativa* L. Sp. Pl. 79. 1753.

Plants branching at the base; culms erect, stout, smooth and shining, commonly 70-100 cm. tall; sheaths rather loose; ligule membranaceous, 3-4 mm. long; blades flat, scabrous, mostly elongate, 5-20 mm. wide; panicle open, pyramidal, 20-40 cm. long, many-flowered, the lower branches in whorls, spreading, the axis, branches, and slender flat pedicels scabrous; spikelets nodding; glumes subequal, about 2.5 cm. long, broad, papery, many-nerved, attenuate; florets 2 (a third rudimentary floret often present), remaining attached on the very short rachilla-joint; lemmas subindurate below, strongly nerved toward the acute minutely toothed apex, 1.5-2 cm. long, glabrous, awnless or with a short awn.

TYPE LOCALITY: Europe.

DISTRIBUTION: Commonly cultivated and occasionally escaped, plants growing in waste ground usually being somewhat depauperate and often with awned spikelets.

ILLUSTRATIONS: Bailion, Hist. Pl. 2: f. 222-229; Bailey, Cyclop. Agr. 2: f. 542, 715-721.

2. *Avena fatua* L. Sp. Pl. 80. 1753.

Avena fatua var. *glabrata* Peterm. Fl. Bienitz 13. 1841. (Type from Europe.)

Culms erect, rather stout, 30-75 cm. tall; leaves numerous, the blades flat, scabrous, elongate, usually 4-8 mm. wide; panicle loose and open, 15-30 cm. long, the slender branches usually horizontally spreading; spikelets nodding; glumes 2-2.5 cm. long, broad, many-nerved, acuminate; florets 3, the rachilla disarticulating; lemmas and rachilla-joints conspicuously hispid below with tawny to brown hairs, strongly nerved toward the acute, toothed apex, 1.5-2 cm. long, the rather stout awn 3-4 cm. long.

TYPE LOCALITY: Europe.

DISTRIBUTION: Weed in cultivated ground and waste places, common on the Pacific coast; native of Europe.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 17: f. 499; Bull. U. S. Dep. Agr. 772: f. 58; Hitchc. Man. f. 585 A.

3. *Avena sterilis* L. Sp. Pl. ed. 2. 118. 1762.

Avena algeriensis Trabut, Bull. Agr. Alger. Tunis 16: 354. 1910.

Avena sterilis algeriensis Trabut, Jour. Hered. 5: 77. 1914. (Presumably based on *A. algeriensis* Trab.)

Similar to *Avena fatua*, the panicle with fewer flowers; spikelets nodding; glumes 3.5-4.5 cm. long, long-acuminate; florets 2 or 3, the rachilla and lower part of the lemma conspicuously brown-hispid, the brownish lemmas about 3 cm. long; awns 5-7 cm. long.

TYPE LOCALITY: Spain.

DISTRIBUTION: Sparingly cultivated, occasionally spontaneous; New Jersey; ballast, Philadelphia, Pennsylvania; Costa Rica; native of Europe.

4. *Avena barbata* Brot. Fl. Lusit. 1: 108. 1804.

Culms relatively slender, commonly 1 meter tall; blades mostly narrower than in *A. fatua*, the panicle looser, the capillary branches and pedicels flexuous; spikelets drooping, the glumes narrower than in *A. fatua*; florets 2, or rarely 3, the lemmas conspicuously brownish-hispid below, attenuate, the apex with 2 setaceous teeth about 4 mm. long, the rather slender awn about 4 cm. long.

TYPE LOCALITY: Portugal.

DISTRIBUTION: Weed in fields and waste places, Washington to California, Arizona, and Mexico; native of Europe.

ILLUSTRATION: Hitchc. Man. f. 587.

5. *Avena pubescens* Huds. Fl. Angl. 42. 1762.

Heuffelia pubescens Schur, Enum. Pl. Transsilv. 760. 1866. (Based on *Avena pubescens* L., error for Huds.)

Avena pubescens Dumort. Bull. Soc. Bot. Belg. 7: 68. 1868. (Based on *Avena pubescens* Huds.)

Avenastrum pubescens Jessen; Dalla Torre, Alpenfl. 44. 1899. (Based on *Avena pubescens* L., error for Huds.)

Perennial; culms in small tufts, erect, 50–80 cm. tall; sheaths and blades pubescent with loosely spreading to retrorse hairs, the blades flat, 7–15 cm. long, 3–6 mm. wide, those of the basal shoots longer and narrower; ligule 4–5 mm. long; panicle narrow but loose, 10–15 cm. long, the filiform flexuous branches ascending; spikelets erect on capillary pedicels, 12–15 mm. long, the glumes and lemmas thin, pale, shining; glumes subequal, 3-nerved, or the first 1-nerved; florets mostly 3, the rachilla with copious long white hairs; lemmas about 1 cm. long, the apex hyaline, acute, erose, the awn attached about the middle, loosely twisted, weakly geniculate, 1.5–2 cm. long.

TYPE LOCALITY: England.

DISTRIBUTION: Introduced in waste places, Connecticut and Vermont; native of Europe.

ILLUSTRATIONS: Hegi, Ill. Fl. Mittel-Eur. *pl.* 30, *f.* 2; Hitchc. Man. *f.* 588.

6. *Avena Hookeri* Scribn. in Hack. True Grasses 123. 1890.

Avena pratensis var. *americana* Scribn. Bot. Gaz. 11: 177. 1886. (Based on *A. versicolor* as described by Hooker, Fl. Bor. Am. 2: 244. 1840. Rocky Mountains, Drummond [209]. Not *A. versicolor* Vill. 1779).

Avena americana Scribn. Bull. U. S. Dep. Agr. Agrost. 7: 183. 1897. (Based on *A. pratensis* var. *americana* Scribn.)

Perennial; culms densely tufted, leafy toward the base, erect, 20–40 cm. tall; sheaths overlapping, keeled; ligule about 3 mm. long; blades firm, flat or folded, with a thick white nerve on the margin, 2–3 mm. wide, the lower as much as 15–20 cm. long; panicle long-exserted, narrow, 5–10 cm. long, the branches erect or nearly so, bearing a single spikelet, or the lower 2; spikelets erect, about 1.5 cm. long; glumes very thin, subequal, 3-nerved; florets 3–6, exceeding the glumes, the rachilla densely white-bearded; lemmas firm, brown, scaberulous, 1–1.2 cm. long, the callus short-bearded, the apex erose, the awn attached a little above the middle, twisted below, geniculate, 1–1.5 cm. long.

TYPE LOCALITY: Rocky Mountains (*Drummond*).

DISTRIBUTION: Dry slopes and prairies, Manitoba and North Dakota to Alberta, Montana, and New Mexico.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: *f.* 165; Hitchc. Man. *f.* 589.

7. *Avena Mortoniana* Scribn. Bot. Gaz. 21: 133. 1896.

Perennial; culms densely tufted, with numerous leafy shoots, 10–20 cm. tall; sheaths pale, papery, retrorsely scabrous to puberulent; ligule minute, pubescent; blades erect, firm, involute, often nearly equaling the panicle, minutely scaberulous; panicle short-exserted, purplish, narrow, 2–5 cm. long, the short branches erect, bearing a single erect, mostly 2-flowered spikelet 1–1.2 cm. long; glumes subequal, exceeding the florets, the first 1-nerved, the second 3-nerved; lemmas firm, 7–8 mm. long, the callus and rachilla white-bearded, the apex hyaline, 4-toothed, the awn twisted, flexuous, 1–1.5 cm. long.

TYPE LOCALITY: Silver Plume, Colorado (*Shear 697*).

DISTRIBUTION: Alpine meadows, Colorado, Utah, and New Mexico.

ILLUSTRATIONS: Bot. Gaz. 21: *pl.* 11; Bull. U. S. Dep. Agr. Agrost. 7: *f.* 166; Hitchc. Man. *f.* 591.

131. *SCHISMUS* Beauv. Agrost. 73. 1812.

Low tufted annuals, with filiform blades and small panicles. Spikelets several-flowered, the rachilla disarticulating above the glumes and between the florets; glumes subequal, usually as long as the spikelet, with white membranaceous margins; lemmas broad, rounded on the back, several-nerved, pilose along the lower part of the margin, bidentate; palea broad, hyaline, the nerves at the margin.

Type species, *Schismus marginatus* Beauv.

1. *Schismus barbatus* (L.) Thellung, Bull. Herb. Boissier II.

7: 391. 1907.

Festuca barbata L. Demonstr. Pl. 3. 1753; Amoen. Acad. 3: 400. 1756.

Schismus fasciculatus Beauv. Agrost. 74: 177. 1812, name only; Trin. Fund. Agrost. 148. 1820.

No locality cited.

Schismus marginatus Beauv. Agrost. 177. *pl.* 15, *f.* 4. 1812. No locality cited.

Culms densely tufted, branching at the base, erect to widely spreading, 5 to 35 cm. tall; foliage mostly scant, the sheaths with a few long delicate hairs at the summit; blades 2-10 cm. long, 1-2 mm. wide, the basal subfiliform, short, curved; panicles pale to purplish, mostly dense, 1-4 cm. long; pedicels slender, finally disarticulating at base and falling with the spikelet or with the glumes; spikelets about 5-flowered, 5-6 mm. long; glumes about equaling the spikelet, 5-7-nerved, acute; lemmas about 2 mm. long, 9-nerved, the summit hyaline, nerveless, the margin appressed-pilose on the lower half, the teeth minute, sometimes with a minute mucro between, the rachilla-joints slender, flexuous; palea concave, as broad as the lemma and about as long.

TYPE LOCALITY: Spain.

DISTRIBUTION: Open ground, yards, along roadsides, and dry river beds, introduced in Arizona and California; native of the Mediterranean region.

ILLUSTRATION: Hitchc. Man. f. 541.

132. SIEGLINGIA Bernh. Syst. Verz. Pfl. 20, 44. 1800.

Brachatera Desv. Nouv. Bull. Soc. Philom. 2: 189. 1810. (Type species, *Festuca decumbens* L.)

Densely tufted perennials with narrow blades and narrow few-flowered panicles. Spikelets 3-5-flowered, the very short rachilla disarticulating above the glumes and between the florets; glumes equal, broad, 5-7-nerved, equaling or slightly exceeding the uppermost floret; lemmas broad, rounded on the back, firm below, 9-nerved, the midnerve and one lateral nerve on each side prominent, extending into the teeth of the 3-toothed apex; palea broad, acute, the nerves near the margin, keeled, ciliate.

Type species, *Festuca decumbens* L.

1. *Sieglingia decumbens* (L.) Bernh. Syst. Verz. Pfl. 20, 44. 1800.

Festuca decumbens L. Sp. Pl. 75. 1753.

Poa decumbens Scop. Fl. Carn. ed. 2. 1: 69. 1772. (Based on *Festuca decumbens* L.)

Danthonia decumbens L. DC. Fl. Franç. 3: 33. 1805. (Based on *Festuca decumbens* L.)

Brachatera decumbens Desv. Nouv. Bull. Soc. Philom. 2: 189. 1810. (Based on *Festuca decumbens* L.)

Triodia decumbens Beauv. Agrost. 76, 160, 179. 1812. (Based on *Danthonia decumbens* Lam. & DC.)

Culms densely tufted with numerous leafy shoots at the base, slender, compressed, 15-50 cm. tall; basal foliage 10-20 cm. long, the sheaths sparsely pilose to subglabrous, with long white hairs at the summit; ligule minute, ciliate; blades flat, mostly 10-15 cm. long, 1.5-2 mm. wide, scabrous toward the ends; panicle long-exserted, narrow, simple or nearly so, the 3-10 spikelets on short slender pedicels; spikelets 8-10 mm. long, turgid; glumes 8-10 mm. long, acute; lemmas 5-6 mm. long, minutely pilose on the margins and callus, the obtuse apex 3-toothed.

TYPE LOCALITY: Europe.

DISTRIBUTION: Sandy, boggy, or peaty soil, introduced in Nova Scotia and Newfoundland; native of Eurasia.

ILLUSTRATION: Bull. U. S. Dep. Agr. Agrost. 17: f. 508.

133. DANTHONIA DC. Fl. Franç. 3: 32. 1805.

Merathrepta Raf. Bull. Bot. Seringe 1: 221. 1830. (Type species, *Avena spicata* L.)

Tufted perennials with narrow blades and few-flowered panicles of rather large spikelets. Spikelets several-flowered, the rachilla readily disarticulating above the glumes and between the florets; glumes about equal, broad, papery, acute, mostly exceeding the uppermost floret; lemmas rounded on the back, obscurely several-nerved, the apex bifid, the lobes acute, usually extending into slender awns, a stout flat, twisted geniculate awn arising from between the lobes.

Blades not elongate and wiry, or if elongate, flat and lax; cleistogamous spikelets produced in the lower sheaths.

Lemmas pilose on the back, sometimes sparsely so.

Glumes 1-1.7 cm. long.

Sheaths glabrous or nearly so; glumes rarely more than 15 mm. long.

- Panicle simple or nearly so, usually contracted after anthesis; blades rarely more than 15 cm. long, commonly less.
- Panicle usually compound and somewhat open; blades or some of them more than 15 cm., often as much as 25 cm. long.
- Sheaths pilose (rarely glabrous); glumes 12-17 mm. long; culms 50-100 cm. tall.
- Glumes mostly 2-2.2 cm. long.
- Lemmas glabrous on the back, pilose on the margin and callus only.
- Panicle narrow, the pedicels appressed.
- Panicle open, the slender pedicels spreading or reflexed.
- Panicle of 2 to several spikelets.
- Panicle of a single spikelet; sometimes with one or two rudimentary spikelets below.
- Blades elongate, involute, and wiry; cleistogamous spikelets in the sheaths none.
- Panicle narrow or loose, not linear and strict; teeth of the lemma awned, about as long as the body of the lemma.
- Callus not attenuate.
- Callus attenuate.
- Spikelets 2-2.5 cm. long; lemma villous on the lower half of the back.
- Spikelets 1.2-1.4 cm. long; lemma glabrous on the back.
- Panicle linear, strict; teeth of the lemma acuminate, firm, awnless, scarcely half as long as the body of the lemma.
1. *D. spicata*.
 2. *D. compressa*.
 3. *D. sericea*.
 4. *D. Parryi*.
 5. *D. intermedia*.
 6. *D. californica*.
 7. *D. unispicata*.
 8. *D. domingensis*.
 9. *D. obtorta*.
 10. *D. filifolia*.
 11. *D. mexicana*.

1. *Danthonia spicata* (L.) Beauv.; R. & S. Syst. Veg. 2: 690. 1817.

Avena spicata L. Sp. Pl. 80. 1753.

Avena glumosa Michx. Fl. Bor. Am. 1: 72. 1803. (Type from "Pennsylvania; Carolina.")

Danthonia glumosa Beauv. Agrost. 92, 153, 160. 1812. (Based on *Avena glumosa* Michx.)

Triodia glumosa Beauv. Agrost. Atlas 12. pl. 18. f. 7. 1812. Evidently an error for *Danthonia glumosa* Beauv.

Merathrepta spicata Raf.; B. D. Jackson, Ind. Kew. 2: 211, as synonym of *Danthonia spicata*. 1894.

Danthonia spicata var. *villosa* Peck, Ann. Rep. N. Y. State Mus. 47: 168. 1894. (Type from New York.)

Danthonia spicata pinetorum Piper, Erythra 7: 103. 1899. (Type from Mason County, Washington, Piper 943.)

Danthonia thermale Scribn. Circ. U. S. Dep. Agr. Agrost. 30: 5. 1901. (Type from Yellowstone Park, Wyo., A. Nelson & E. Nelson 6140.)

Danthonia spicata longipila Scribn. & Merr. Circ. U. S. Dep. Agr. Agrost. 30: 7. 1901. (Type from Benton Co., Ark., Plank 38.)

Merathrepta pinetorum Piper, Contr. U. S. Nat. Herb. 11: 122. 1906. (Based on *Danthonia spicata pinetorum* Piper.)

Merathrepta thermale A. Heller, Muhlenbergia 5: 120. 1909. (Based on *Danthonia thermale* Scribn.)

Merathrepta thermale var. *pinetorum* Piper; Fedde & Schuster, Bot. Jahresb. 37: 128. 1911 (erroneously ascribed to Heller, Muhlenbergia 5: 120. 1909).

Pentameris spicata Nelson & Macbr. Bot. Gaz. 56: 470. 1913. (Based on *Avena spicata* L.)

Pentameris thermale Nelson & Macbr. Bot. Gaz. 56: 470. 1913. (Based on *Danthonia thermale* Scribn.)

Danthonia pinetorum Piper; Piper & Beattie, Fl. N. W. Coast 46. 1915. (Based on *D. spicata pinetorum* Piper.)

Culms terete, densely tufted, 20-70 cm. (mostly not more than 50 cm.) tall, slender, terete; leaves numerous in a basal cluster, the blades usually curled or flexuous; sheaths glabrous or sparsely pilose, with a tuft of long hairs in the throat; blades usually not more than 12 cm. long, filiform to 2 mm. wide, occasionally a few blades 15-20 cm. long, subinvolute or in damp weather flat, glabrous or sparsely pilose; panicle 2-5 cm. long, rarely longer, the stiff short branches bearing each a single spikelet, or the lower longer with 2 (rarely 3 or 4) spikelets, usually erect after anthesis; glumes 10-12 mm. long (rarely longer); lemmas 4-5 mm. long, sparsely villous except the 2-toothed summit, the teeth acuminate to subsetaceous; terminal segment of the awn about 5 mm. long; palea broad, flat, obtuse, ciliolate, reaching to the base of the awn.

TYPE LOCALITY: Pennsylvania.

DISTRIBUTION: Dry and sterile or rocky soil, Newfoundland to British Columbia, and southward to Florida, eastern Texas, and eastern Kansas, and in the mountains to New Mexico and Oregon.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 168; Bull. U. S. Dep. Agr. 772: f. 63; Hitchc. Man. f. 596 A.

2. *Danthonia compressa* Aust. in Peck, Ann. Rep. N. Y. State
Cab. 22: 54. 1869.

- Danthonia spicata* var. *compressa* Wood, Bot. & Fl. ed. 1871. 396. 1871. (Based on *D. compressa* Aust.)
Danthonia Alleni Aust. Bull. Torrey Club 3: 21. 1872. (Rockaway, Long Island, Allen.)
Danthonia Faxonii Aust. Bull. Torrey Club 6: 190. 1877. (White Mountains, New Hampshire, Faxon in 1877.)
Merathrepta compressa A. Heller, Muhlenbergia 5: 120. 1909. (Based on *Danthonia compressa* Aust.)
Pentameris compressa Nelson & Macbr. Bot. Gaz. 56: 469. 1913. (Based on *Danthonia compressa* Aust.)

Culms compressed, rather loosely tufted, 40–80 cm. tall, erect or sometimes decumbent at the base or with short rhizomes; sheaths reddish above the nodes, glabrous or sparsely pubescent on the collar, with a conspicuous tuft of white hairs in the throat; blades elongate, some of them commonly 20–25 cm. long, 2–3 mm. wide, usually flat, sometimes involute and subuliform, scabrous; panicle 5–8 cm. (rarely up to 10 cm.) long, the slender branches bearing 2 or 3 spikelets, somewhat contracted after anthesis; glumes 10–14 mm., usually about 12 mm. long; lemmas 4–5 mm. long, sparsely villous nearly to the summit, the awned dorsal teeth 2–3 mm. long; terminal segment of the awn 5–6 mm. long; palea obtuse.

TYPE LOCALITY: Herkimer County, New York (Austin in 1868).

DISTRIBUTION: Nova Scotia to Quebec, southward to Ohio and Virginia, and in the mountains to North Carolina and Tennessee.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 169, Bull. 20: f. 72; Hitchc. Man. f. 596 B.

3. *Danthonia sericea* Nutt. Gen. 1: 71. 1818.

- Danthonia glabra* Nash, Bull. Torrey Club 24: 43. 1897. (Type from Little Stone Mountain, Georgia, Small in 1895.) Not *D. glabra* Philippi, 1896.
Danthonia epilix Scribn. Circ. U. S. Dep. Agr. Agrost. 30: 7. 1901. (Based on *D. glabra* Nash.)
Merathrepta sericea A. Heller, Muhlenbergia 5: 120. 1909. (Based on *Danthonia sericea* Nutt.)
Pentameris epilix Nelson & Macbr. Bot. Gaz. 56: 469. 1913. (Based on *Danthonia epilix* Scribn.)
Pentameris sericea Nelson & Macbr. Bot. Gaz. 56: 470. 1913. (Based on *Danthonia sericea* Nutt.)

Culms erect, densely tufted, 50–100 cm. tall; sheaths, especially the lower, villous (rarely glabrous); blades 10–25 cm. long, 2–4 mm. wide, those of the innovations mostly involute, those of the culm mostly flat, sparsely villous to glabrous; panicle 5–10 cm. long, relatively many-flowered, the branches bearing 2–6 spikelets, rather open, or contracted after anthesis; glumes 12–17 mm. long; lemmas densely long-pilose, especially along the margin, about 10 mm. long, including the slender aristate teeth, the teeth about half the entire length; terminal segment of the dorsal awn 8–10 mm. long; palea narrowed toward the 2-toothed apex.

TYPE LOCALITY: "Carolina to Florida;" the type from Georgia.

DISTRIBUTION: Sandy soil and sterile woods, chiefly on the coastal plain, Massachusetts and New Jersey to northern Florida, Tennessee, and Louisiana.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 170; Hitchc. Man. f. 599.

NOTE: A rare form with glabrous foliage, occurring from Virginia to Georgia, has been segregated as *D. epilix* Scribn. (*D. glabra* Nash, not *D. glabra* Phil.)

4. *Danthonia Parryi* Scribn. Bot. Gaz. 21: 133. 1896.

- Danthonia Parryi* var. *longifolia* Scribn. Bot. Gaz. 21: 134. 1896. (Type from Twin Lakes, Colorado, Wolf 1170.)
Merathrepta Parryi A. Heller, Muhlenbergia 5: 120. 1909. (Based on *Danthonia Parryi* Scribn.)

Culms rather stout, in tough clumps, 30–60 cm. tall, somewhat enlarged at base by the numerous, over-lapping, firm, persistent sheaths; sheaths glabrous, somewhat pilose at the throat, with a glabrous or pubescent line or ridge on the collar, the lower blades falling from the sheaths; blades erect-flexuous, mostly 15–25 cm. long, narrow or filliform, flat or involute, glabrous; panicle 3–7 cm. long, usually with 3–8 spikelets, the branches more or less pubescent, ascending or appressed, the lowermost 1–2 cm. long, with 1 or 2 spikelets; glumes 20–22 mm. long, rarely less; lemmas sparsely to densely pilose on the back and margin, strongly pilose on the sides of the callus, 12–15 mm. long including the abruptly awned teeth; terminal segment of the dorsal awn 8–12 mm. long; palea narrowed above, 2-toothed, nearly as long as the lemma.

TYPE LOCALITY: Colorado (Parry).

DISTRIBUTION: Open grassland, open woods, and rocky slopes in the mountains, mostly below timber line, from Alberta to New Mexico.

ILLUSTRATION: Hitchc. Man. f. 603.

5. *Danthonia intermedia* Vasey, Bull. Torrey Club 10: 52. 1883.

Danthonia intermedia *Cusickii* T. A. Williams, Circ. U. S. Dep. Agr. Agrost. 30: 7. 1901. (Type from Oregon, *Cusick* 2427.)

Merathrepta intermedia Piper, Contr. U. S. Nat. Herb. 11: 122. 1906. (Based on *Danthonia intermedia* Vasey.)

Merathrepta intermedia *Cusickii* Piper, Contr. U. S. Nat. Herb. 11: 122. 1906. (Based on *Danthonia intermedia* *Cusickii* T. A. Williams.)

Pentameris intermedia Nelson & Macbr. Bot. Gaz. 56: 470. 1913. (Based on *Danthonia intermedia* Vasey.)

Danthonia Cusickii Hitchc. Am. Jour. Bot. 2: 305. 1915. (Based on *D. intermedia Cusickii* T. A. Williams.)

Culms densely tufted, 10–50 cm. tall; sheaths glabrous (the lower rarely pilose), with long hairs in the throat; blades subinvolute, or those of the culm flat, glabrous or sparsely pilose; panicle purplish, narrow, few-flowered, 2–5 cm. long, the branches appressed, bearing each a single spikelet; glumes about 15 mm. long; lemmas appressed-pilose on the margin below and on the callus, the back glabrous, 7–8 mm. long, including the short-awned teeth; terminal segment of the dorsal awn 5–8 mm. long; palea narrowed above, notched, nearly as long as the lemma.

TYPE LOCALITY: Mount Albert, Canada (O. D. Allen).

DISTRIBUTION: Meadows and bogs, northern and alpine regions, from Newfoundland and Quebec to Alaska, and southward to northern Michigan, New Mexico, and California.

ILLUSTRATION: Hitchc. Man. f. 601.

6. *Danthonia californica* Bolander, Proc. Calif. Acad.

2: 182. 1862.

Merathrepta californica Piper, Contr. U. S. Nat. Herb. 11: 122. 1906. (Based on *Danthonia californica* Bolander.)

Pentameris californica Nelson & Macbr. Bot. Gaz. 56: 469. 1913. (Based on *Danthonia californica* Bolander.)

Culms densely tufted, 30–80 cm. tall, commonly disarticulating at the nodes; sheaths glabrous, pilose at the throat; blades flat or, especially those of the innovations, involute; glabrous, mostly 10–20 cm. long; panicles bearing mostly 2–5 spikelets, the pedicels slender, spreading or somewhat reflexed, more or less flexuous, 1–2 cm. long, with a rather prominent pulvinus at the base of each; glumes 15–20 mm. long (rarely less or more); lemmas pilose on the lower part of the margin and on the short stipe-like callus, glabrous on the back, 12–15 mm. long, including the abruptly long-awned teeth; terminal segment of dorsal awn 5–10 mm. long; palea subacute, extending beyond the base of the cleft of the lemma.

TYPE LOCALITY: California (Bolander).

DISTRIBUTION: Meadows and open woods, Montana to British Columbia, and southward to Colorado and California.

ILLUSTRATION: Hitchc. Man. f. 605.

Danthonia californica var. *americana* (Scribn.) Hitchc. Proc. Biol. Soc. Wash. 41: 160. 1928. (Based on *D. americana* Scribn.) *Danthonia grandiflora* Philippi, Anal. Univ. Chile 48: 568. 1873. (Type from Nuble, Chile.)

Not *D. grandiflora* Hochst., 1851. *Danthonia americana* Scribn. Circ. U. S. Dep. Agr. Agrost. 30: 5. 1901. (Based on *D. grandiflora* Philippi.) *Merathrepta americana* Piper, Contr. U. S. Nat. Herb. 11: 123. 1906. (Based on *Danthonia americana* Scribn.)

Pentameris americana Nelson & Macbr. Bot. Gaz. 56: 469. 1913. (Based on *Danthonia americana* Scribn.)

Danthonia Macounii Hitchc. Am. Jour. Bot. 2: 305. 1915. (Type from Nanaimo, Vancouver Island, *Macoun* 78825.)

Culms averaging shorter, the tufts usually more spreading; foliage sparsely to conspicuously spreading-pilose; spikelets averaging smaller, but large plants with large spikelets occur with conspicuously pilose foliage. TYPE LOCALITY: Chile. DISTRIBUTION: Montana and Wyoming to British Columbia, south to California; Chile.

7. *Danthonia unispicata* (Thurber) Munro; Macoun, Cat. Can.

Pl. 4: 215. 1888.

Danthonia californica var. *unispicata* Thurber, in S. Wats. Bot. Calif. 2: 294. 1880. (Type "from San Diego to San Francisco, Calif.")

Merathrepta unispicata Piper, Contr. U. S. Nat. Herb. 11: 123. 1906. (Based on *Danthonia unispicata* Munro.)

Pentameris unispicata Nelson & Macbr. Bot. Gaz. 56: 470. 1913. (Based on *Danthonia unispicata* Munro.)

Culms in dense spreading tufts, 15–25 cm. tall; sheaths and blades from sparsely to conspicuously pilose, the hairs on the sheaths spreading or reflexed, the blades mostly 3–8 cm. long; panicle reduced to a single spikelet or sometimes 2, rarely 3, spikelets, the lower spikelets usually reduced, their pedicels appressed or ascending, the long pedicel of the terminal spikelet jointed with the culm; glumes mostly 15–18 mm. long; lemmas bearded on the short stipe-like callus, otherwise glabrous, 8–10 mm. long, including the acuminate awn-tipped teeth; terminal segment of the dorsal awn 4–7 mm. long; palea obtuse, nearly as long as the lemma.

TYPE LOCALITY: California.

DISTRIBUTION: Open or rocky ground, Montana to British Columbia, and southward to Wyoming and California.

ILLUSTRATION: Hitchc. Man. f. 607.

8. *Danthonia domingensis* Hack. & Pilger, in Urban, Symb.

Antill. 6: 1. 15 JI. 1909.

Danthonia Shrevei Britton; Nash, Torreya 9: 210. 26 O. 1909. (Type from Jamaica, *Shreve* in 1906.)

Culms erect, 30–60 cm. tall, finally forming large dense tussocks raised above the general level of the soil; leaves aggregate at the base, the sheaths pilose at least at the sides at the summit, the blades usually elongate and overtopping the panicles, from rather coarse to subfiliform, involute, scabrous toward the ends; panicle 10–15 cm. long, rather open; spikelets 12–15 mm. long, 3–6-flowered, the rachilla-joints conspicuously villous; glumes 7–12 mm. long, or rarely longer; lemmas villous except the summit, 10–14 mm. long, including the long-awned teeth; terminal segment of the dorsal awn about 1 cm. long; palea narrowed above, reaching to about the base of the cleft of the lemma.

TYPE LOCALITY: Santo Domingo (*Eggers 2227b*).

DISTRIBUTION: On cleared slopes near the summit of Sir Johns Peak, altitude about 2000 meters, the only known locality in Jamaica, and in the mountains of Hispaniola, altitude 1800 to 2700 meters.

ILLUSTRATION: Misc. Pub. U. S. Dep. Agr. 243: f. 39 A.

9. *Danthonia obtorta* Chase, in Hitchc. Misc. Pub. U. S. Dep.

Agr. 243: 70. 1936.

Culms erect in dense hard tufts, the lower sheaths firm, brownish, with a few long hairs at the summit; blades elongate, equaling or over-topping the panicle, involute, slender, at the base narrower than the firm summit of the sheath, the lower part curved forward, bringing the upper surface downward, this surface pilose with fragile hairs, the blades otherwise glabrous and smooth; panicle 13–16 cm. long, loose, spikelets 2–2.5 cm. long, 7–9-flowered, the slender villous rachilla-joints strongly zigzag; glumes 20–22 mm. long; lemmas villous on the lower half, 15–18 mm. long, including the long-awned teeth, the callus acuminate; terminal segment of the dorsal awn 15–17 mm. long; palea narrowed above, extending slightly beyond the base of the cleft of the lemma.

TYPE LOCALITY: Morne de la Selle, Haiti (*Ekman H 3164*).

DISTRIBUTION: Wooded limestone ridges, Hispaniola, altitude 2400 to 2700 meters.

ILLUSTRATION: Misc. Pub. U. S. Dep. Agr. 243: f. 39 B.

10. *Danthonia filifolia* Hubbard, Contr. Gray Herb. 52: 60. 1917.

Culms slender, erect, in dense tufts, 75–95 cm. tall; leaves aggregate at the base, the sheaths firm with a few long hairs at the summit, the involute, subfiliform, elongate blades sparsely long-pilose on the upper surface toward the base; panicle rather dense, 5–7 cm. long, the branches ascending to appressed; spikelets purplish, 10–12 mm. long, 5–8-flowered; glumes 10–12 mm. long; lemmas conspicuously long-pilose on the margin and on the attenuate callus, glabrous on the back, 8–10 mm. long, including the long-awned teeth, these very fine and as long as the

body of the lemma; terminal segment of the dorsal awn 4-6 mm. long; palea extending slightly beyond the cleft of the lemma.

TYPE LOCALITY: Bogs, Honey Station, Puebla (*Pringle 10818*).
DISTRIBUTION: Known only from the type collection.

11. *Danthonia mexicana* Scribn. Proc. Acad. Phila.

1891: 301. 1891.

Culms erect in dense hard tufts, 70-100 cm. tall; leaves aggregate at base, the sheaths firm, brown, the elongate blades involute, rather rigid, pungent, scaberulous; ligule rather firm, 2-3 mm. long, the margins sometimes separating and forming auricles; panicle linear, strict, 10-20 cm. long, nearly simple, the rather remote appressed lower branches sometimes bearing 3 or 4 spikelets, the common axis scabrous; spikelets short-pedicelled, purplish, 15-16 mm. long, 3-flowered or 4-flowered, the short rachilla-joints pilose; glumes 5-7-nerved, acuminate, shorter than the uppermost florets, the first 11-12 mm., the second about 13 mm. long; lemmas pilose except at the scabrous summit, 10-11 mm. long, including the firm acuminate awnless lobes; terminal segment of the awn 8-10 mm. long; palea notched, much shorter than the lemma.

TYPE LOCALITY: Carneros Pass, Coahuila (*Pringle 3279*).
DISTRIBUTION: Limestone hills, Coahuila and Puebla.
ILLUSTRATION: Proc. Acad. Phila. 1891: *pl. 13. f. 7, 7a, 7b*.

134. *ARRHENATHERUM* Beauv. Agrost. 55. 1812.

Rather tall perennials with flat blades and narrow loose panicles. Spikelets 2-flowered, the lower floret staminate, the upper perfect, the rachilla disarticulating above the glumes and produced beyond the florets; glumes rather broad and papery, the first 1-nerved, the second a little longer than the first and about as long as the spikelet, 3-nerved; lemmas 5-7-nerved, hairy on the callus, the lower bearing near the base a twisted, geniculate, exserted awn, the upper bearing a short straight slender awn just below the tip.

Type species, *A. avenaceum* Beauv.

1. *Arrhenatherum elatius* (L.) Presl, Fl. Cech. 17. 1819.

Avena elatior L. Sp. Pl. 79. 1753. Europe.
Holcus avenaceus Scop. Fl. Carn. ed. 2: 276. 1772. (Based on *Avena elatior* L.)
Avena elata Salisb. Prodr. 23. 1796. (Based on *A. elatior* L.) Not *A. elata* Forsk. 1775.
Arrhenatherum avenaceum Beauv. Agrost. 55, 152, 164. *pl. 11, f. 5*. 1812. (Based on *Holcus avenaceus* Scop.)
Arrhenatherum americanum Beauv. Agrost. 56, 152, name only. 1812.

Short-lived perennial; culms in small clumps, erect, glossy, 1-1.5 meters tall; sheaths rather loose; ligule membranaceous, about 2 mm. long; blades flat, scabrous, 10-25 cm. long, 5-10 mm. wide; panicle pale or purplish, shining, 15-30 cm. long, the short branches verticillate, spreading in anthesis, usually spikelet-bearing from the base; spikelets 7-9 mm. long; glumes scaberulous, shining, the first about two thirds as long as the spikelet, the second nearly as long; lemmas scabrous, 7-9 mm. long, bearded on the callus, the awn of the staminate floret about twice as long as its lemma, the awn of the perfect floret from minute to 4 mm. long; paleas hyaline, acuminate, slightly shorter than their lemmas.

TYPE LOCALITY: Europe.

DISTRIBUTION: Meadows, open ground, and waste places, Newfoundland to British Columbia, and southward to Georgia, Tennessee, Iowa, Idaho, and California; frequent in the Northern and Eastern States; introduced from Europe and escaped from cultivation.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: *f. 167*; Bull. U. S. Dep. Agr. 77: *f. 59*; Hitchc. Man. *f. 592 A*.

Arrhenatherum elatius var. *bulbosum* (Willd.) Spenner, Fl. Frib. 113. 1825. *Avena tuberosa* Gilib. Exerc. Phyt. 538. 1792. (Type from France.) *Avena bulbosa* Willd. Ges. Nat. Freunde Berlin Neue Schr. 2: 116. 1799. Switzerland. *Holcus bulbosus* Schrad. Fl. Germ. 1: 248. 1806. (Based on *Avena bulbosa* Willd.) *Holcus avenaceus* var. *bulbosus* Gaudin, Agrost. Helv. 1: 136. 1811. (Based on *H. bulbosus* Schrad.) *Avena elatior* var. *bulbosa* St. Amans, Fl. Agen. 47. 1821. (Based on *A. bulbosus* Willd.) *Arrhenatherum tuberosum* F. Schultz, Pollichia 20-21: 272. 1863. (Based

on *Avena tuberosa* Gilib.) *Avena elatior* var. *tuberosa* Asch. Fl. Brand. 1: 826. 1864. (Based on *A. tuberosa* Gilib.) *Arrhenatherum elatius* var. *tuberosum* Thiel. Bull. Soc. Bot. Belg. 12: 184. 1873. (Based on *Avena tuberosa* Gilib.) Base of culm consisting of a series of closely approximate corms (short subglobose internodes) 5–10 mm. in diameter. TYPE LOCALITY: Switzerland. DISTRIBUTION: Sparingly introduced, Michigan; Virginia and West Virginia to Georgia; Oregon and California; apparently slowly spreading; native of Europe. ILLUSTRATION: Hitchc. Man. f. 592 B.

135. *HOLCUS* L. Sp. Pl. 1047. 1753; Gen. Pl. ed. 5. 469. 1754.

Ginannia Bubani, Fl. Pyren. 4: 321. 1901. (Type species, *G. pubescens* Bubani.) Not *Ginannia* Scop. 1777, nor *Ginannia* Dietr. 1804.
Notholcus Nash; Hitchc. in Jepson, Fl. Calif. 1: 126. 1912. (Type species *N. lanatus* Nash.)
Nothoholcus Nash in Britt. & Brown, Ill. Fl. ed. 2. 1: 214. 1913. (Type species, *N. lanatus* Nash.)

Perennials with flat blades and dense contracted panicles. Spikelets 2-flowered, the pedicel disarticulating below the glumes, the rachilla curved and somewhat elongate below the first floret, not prolonged above the second floret; glumes keeled; the first 1-nerved, the second strongly 3-nerved, longer than the 2 florets; first floret perfect, the lemma awnless; second floret staminate, the lemma bearing on the back a short awn.

Type species, *Holcus lanatus* L.

NOTE: For discussion of the generic name *Holcus* L. see Hitchcock, A. S., Bull. U. S. Dep. Agr. 772 (ed. 2): pp. 118, 273–274. 1936.

Rhizomes wanting; awn of the upper floret short, hooklike. 1. *H. lanatus*.
 Rhizomes developed; awn of the upper floret nearly as long as the spikelet, geniculate. 2. *H. mollis*.

1. *Holcus lanatus* L. Sp. Pl. 1048. 1753.

Aira holcus-lanatus Vill. Hist. Pl. Dauph. 2: 87. 1787. (Based on *Holcus lanatus* L.)
Avena pallida Salisb. Prodr. 24. 1796. (Based on *Holcus lanatus* L.) Not *A. pallida* Thunb. 1794.
Avena lanata Koeler, Descr. Gram. 303. 1802. (Based on *Holcus lanatus* L.)
Ginannia pubescens Bubani, Fl. Pyren. 4: 321. 1901. (Based on *Holcus lanatus* L.)
Notholcus lanatus Nash; Hitchc. in Jepson, Fl. Calif. 1: 126. 1912. (Based on *Holcus lanatus* L.)
Nothoholcus lanatus Nash in Britt. & Brown, Ill. Fl. ed. 2. 1: 214. 1913. (Based on *Holcus lanatus* L.)
Ginannia lanata Hubbard, Rhodora 18: 234. 1916. (Based on *Holcus lanatus* L.)

Plant conspicuously grayish, velvety-pubescent; culms in tufts, erect from a decumbent or curved base, 30–60 cm. tall; sheaths shorter than the internodes, the uppermost often somewhat inflated; ligule membranaceous, about 2 mm. long; blades mostly 5–20 cm. long, 4–10 mm. wide; panicles pale, purple-tinged, densely flowered, contracted after anthesis, 8–15 cm. long, 2–4 cm. wide; spikelets about 4 mm. long; glumes short-pubescent, hirsute on the nerves, the second broader and a little longer than the first; lemmas smooth and shining, the first about 2.3 mm. long, raised on a minute curved rachilla-joint, the second slightly smaller, with a short hooklike awn; paleas thin, slightly shorter than their lemmas.

TYPE LOCALITY: Europe.

DISTRIBUTION: Open ground, meadows, and moist places, Maine to Iowa, and southward to Georgia and Louisiana; common on the Pacific coast from British Columbia and Idaho to Arizona and California; Costa Rica; Haiti and Jamaica; introduced from Europe; occasionally cultivated as a meadow grass on light or sandy land.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 151; Bull. U. S. Dep. Agr. 772: f. 62; Hitchc. Man. f. 593 A.

2. *Holcus mollis* L. Syst. Nat. ed. 10. 2: 1305. 1759.

Aira mollis Schreb. Spic. Fl. Lips. 51. 1771. (Based on *Holcus mollis* L.)
Aira holcus-mollis Vill. Hist. Pl. Dauph. 2: 88. 1787. (Based on *Holcus mollis* L.)
Avena sylvatica Salisb. Prodr. 24. 1796. (Based on *Holcus mollis* L.)
Avena mollis Koeler, Descr. Gram. 300. 1802. (Based on *Holcus mollis* L.) Not *A. mollis* Salisb., 1796.
Ginannia mollis Bubani, Fl. Pyren. 4: 321. 1901. (Based on *Holcus mollis* L.)
Notholcus mollis Hitchc. Am. Jour. Bot. 2: 304. 1915. (Based on *Holcus mollis* L.)

Culms ascending, 50–100 cm. tall, leafy below, with vigorous slender rhizomes; sheaths, except the lower, glabrous; ligule membranaceous, about 2 mm. long; blades from rather harshly velvety on both surfaces to glabrescent-scabrous, obscurely white-margined, mostly 6–13 cm. long, 4–10 mm. wide; panicle ovate to narrowly oblong, dense to rather loose, 6–10 cm. long; spikelets 4–5 mm. long; glumes subequal, acuminate, scabrous, hirsute on the nerves, the second

broader than the first; lemmas pubescent on the callus and on the back toward the summit, about 2.5 mm. long, the second with a geniculate awn 3-4 mm. long; paleas thin, nearly as long as their lemmas.

TYPE LOCALITY: Europe.

DISTRIBUTION: Damp places, recently introduced and apparently spreading, Lewis County, New York; ballast, Camden, New Jersey; Washington to California; native of Europe.

ILLUSTRATION: Hitchc. Man. f. 593 B.

136. TRISTACHYA Nees, Agrost. Bras. 458. 1829.

Monopogon Presl, Rel. Haenk. 1: 324. 1830. (Type species, *M. avenaceus* Presl.)

Tall perennials with elongate blades, the panicles with large spikelets on short clavate pedicels in three's, the three equal and closely appressed at the ends of the branches. Spikelets 2-flowered, the lower floret staminate or neuter, the upper perfect, the rachilla disarticulating above the staminate floret; glumes narrow, nearly flat, strongly 3-nerved, acuminate, the second longer than the first and the florets; sterile lemma narrow, 3-5-nerved, acuminate, its palea thin toward the summit, the apex bifid; perfect floret becoming indurate, forming a Stipa-like fruit, the bearded rachilla-joint attached at the base like a callus, the lemma 7-9-nerved, the apex with 2 awned lobes or teeth, 2 nerves extending into each lobe, 5-7 nerves coalescing into a strong flat awn from between the teeth, the awn twisted below, sometimes disarticulating at base in drying; palea thin, pilose, sulcate between the nerves, the apex bifid.

Type species, *Tristachya leiostachya* Nees.

NOTE: The genus *Tristachya* Nees properly belongs in the tribe with *Arundinella* Raddi and the South American and African *Trichopteryx* Nees, rather than in Aveneae, where it was placed by Hackel and by Nash.

Triad of spikelets, excluding awns, 3-3.5 cm. long; panicle-branches mostly simple and shorter than the spikelets.

Triad of spikelets, excluding awns, not more than 2 cm. long; panicle-branches, at least the lower, compound, much longer than the spikelets.

Plants slender, about 1 meter tall; blades 3-4 mm. wide.

Plants robust, 1.5 meters tall or more; blades 5-10 mm. wide.

1. *T. avenacea*.

2. *T. angustifolia*.

3. *T. laxa*.

1. *Tristachya avenacea* (Presl) Scribn. & Merr. Bull. U. S. Dep. Agr. Agrost. 24: 23. 1901.

Monopogon avenaceus Presl, Rel. Haenk. 1: 325. 1830.

Tristachya mexicana Kunth, Rév. Gram. Suppl. XXVI. 1830. (Based on *Monopogon avenaceus* Presl.)

Culms in tufts, erect, 80-100 cm. tall, the nodes strigose; sheaths, except the lowermost, much shorter than the internodes, sparsely appressed-hirsute to glabrous; ligule a ring of stiff hairs less than 1 mm. long; blades flat to subinvolute, elongate, spreading to reflexed, flexuous in age, 3-5 mm. wide, sometimes hirsute on the upper surface toward the base, the margins scabrous; panicle erect, the slender scabrous axis 6-15 cm. long, the rather distant appressed to ascending branches 0.5-3.5 cm. long, scabrous; spikelets brown, the triad, excluding the awns, 3-3.5 cm. long; first glume 1.7-2.2 cm. long, minutely ciliate at the obscurely toothed apex; second glume about 3 cm. long, tapering to a narrow, ciliolate, truncate or minutely lobed apex; sterile lemma a little longer than the first glume and similar to it; fertile lemma villous, especially toward the base, 8-9 mm. long, including the bearded callus and the short acuminate teeth; awn 4-7 cm. long, twisted about half its length, the terminal segment flexuous.

TYPE LOCALITY: Mexico (*Haenke*).

DISTRIBUTION: Hills and wooded slopes, Jalisco and Oaxaca.

ILLUSTRATION: Presl, Rel. Haenk. 1: pl. 44.

2. *Tristachya angustifolia* Hitchc. Contr. U. S. Nat. Herb. 17: 328. 1913.

Culms in loose tufts with a hard knotty base, erect, slender, about 1 meter tall; foliage purplish, glabrous, the sheaths shorter than the internodes; ligule a minute ring of stiff hairs;

blades flat, with an involute tip, scabrous above and on the margin, 3-4 mm. wide, the lower elongate, the upper reduced to involute points; panicle loose, 10-15 cm. long, the slender, flexuous axis and branches nearly smooth, the lower branches as much as 6 cm. long; spikelets tawny, the triad, excluding the awns, about 2 cm. long; first glume 13-14 mm. long, acute, entire or obscurely toothed; second glume 17-18 mm. long, subacute, slightly erose; sterile lemma slightly longer than the first glume, 3-toothed and ciliate at the subhyaline apex; fertile lemma villous, except on the middle dorsum, about 8 mm. long, including the bearded callus and short-acuminate teeth; awn stout, 32-35 mm. long, twisted more than half its length.

TYPE LOCALITY: Santa Teresa, top of Sierra Madre, Tepic (*Rose 2229*).
DISTRIBUTION: Known only from the type collection.

3. *Tristachya laxa* Scribn. & Merr. Bull. U. S. Dep. Agr. Agrost.
24: 24. 1901.

Culms robust, in tufts, erect, 1.5-2 meters tall; sheaths exceeding the internodes, becoming somewhat flattened in age and orange-brown within; ligule a ring of hairs 1.5 mm. long; blades flat, elongate, 5-10 mm. wide, scabrous, especially on the upper surface and the margin; panicle open, lax, 40-45 cm. long, the slender axis and filiform branches drooping, flexuous, nearly smooth, the lower branches as much as 15 cm. long; spikelets livid-purplish, the triad, excluding the awns, about 2 cm. long; glumes scabrous toward the summit, ciliate at the acuminate tips, the first 16-18 mm. long, the second 18-20 mm. long; sterile lemma shorter than the first glume, minutely 3-toothed and ciliate at the acuminate apex; fertile lemma villous, 10-11 mm. long, including the bearded callus and awn-tipped teeth, these 1.5-2.5 mm. long; awn 15-25 mm. long, twisted about half its length or slightly more.

TYPE LOCALITY: Durango (*Rose 2334*).

DISTRIBUTION: Known only from the type collection, the particular locality not given.

ILLUSTRATION: Bull. U. S. Dep. Agr. Agrost. 24: f. 7.

Tribe 10. **CHLORIDEAE**.¹ Spikelets 1-several-flowered, usually with one or more imperfect reduced florets above the fertile ones (two below the fertile one in *Ctenium*), sessile or subsessile in two rows on one side of a usually flattened rachis which is sometimes prolonged beyond the spikelets; spikes solitary, digitate, or racemose. Articulation of the rachilla above the glumes, except in *Spartina* and *Beckmannia*. Florets usually perfect except in *Opizia*, *Pringleochloa*, *Buchloë*, and *Cathestecum*, in which they are unisexual (or rarely perfect in *Cathestecum*). Upper florets in *Bouteloua* often staminate. Spikes deciduous from the main axis in *Cathestecum*, in some species of *Bouteloua* (Section *Atheropogon*), and the pistillate but not the staminate in *Opizia*, *Buchloë*, and *Pringleochloa*.

Inflorescence distinctly exserted, or at least not hidden in the upper sheaths.

Plants with perfect flowers.

Spikelets 1-flowered, with no rudimentary florets above the fertile one.

Spike solitary.

137. MICROCHLOA.

Spikes digitate.

138. CYNODON.

Spikes racemose.

Rachilla articulated below the glumes, the spikelets falling entire.

Glumes unequal, the first shorter, the second longer than the floret.

139. SPARTINA.

Glumes equal, saccate, slightly shorter than the floret.

140. BECKMANNIA.

Rachilla articulated above the glumes.

Spikes widely spreading, slender, elongate; lemma 3-nerved.

141. SCHEDONNARDUS.

Spikes appressed, relatively short; lemma 5-nerved.

142. WILLKOMMIA.

Spikelets 2-several-flowered or, if only 1-flowered, with one or more rudimentary florets above the perfect one.

Spikes digitate (subdigitate or verticillate in *Chloris chloridea* and *Chloris Brandegei*).

¹ By Jason Richard Swallen.

- Lemmas awnless, or awn pointed.
 Rachis prolonged beyond the spikelets in a naked point. 143. DACTYLOCTENIUM.
 Rachis not prolonged. 144. ELEUSINE.
- Lemmas awned.
 Lemmas 1-awned. 145. CHLORIS.
 Lemmas 3-awned, the lateral awns sometimes reduced. 146. TRICHLORIS.
- Spikes solitary or racemose.
 Spikes solitary, rarely 2 or 3 in *Saugetia* and *Ctenium*.
 Spikelets with two sterile florets below the fertile one;
 second glume with a stout divergent awn at the middle. 147. CTENIUM.
 Spikelets with no sterile florets below the fertile ones.
 Spikelets 2-flowered, the upper floret often much
 reduced.
 Lemmas mucronate; blades short, pungent, di-
 stichous. 148. LEPTURIDIUM.
 Lemmas with a long slender awn; blades elongate,
 involute, not conspicuously distichous. 149. SAUGETIA.
 Spikelets several-flowered. 150. TRIPOGON.
- Spikes several to many, racemose.
 Lemmas entire or minutely bifid, awnless or 1-awned.
 Rudiment 1-awned, sometimes reduced to one or two
 awns, rarely wanting. 151. GYMNOPOGON.
 Glumes exceeding the florets, both 1-nerved.
 Glumes shorter than the florets, the first 1-nerved,
 the second usually 3-5-nerved. 152. GOUINIA.
 Rudiment awnless.
 Rachilla and callus of the florets glabrous or nearly
 so. 153. LEPTOCHLOA.
 Rachilla and callus of the florets strongly pilose. 154. TRICHONEURA.
- Lemmas variously lobed or dentate, usually 3-awned.
 Spikelets with one perfect floret and one or two rudi-
 mentary florets above it; rachis not prolonged bey-
 ond the spikelets (except as a single naked point
 in *B. hirsuta* and *B. hirticulmis*). 155. BOUTELOUA.
 Spikelets with two perfect florets; rachis prolonged
 beyond the spikelets as two inconspicuous hairy
 bristles. 156. PENTARRHAPHIS.
- Plants monoecious or dioecious, or the florets unisexual (rarely perfect in
Cathestecum).
 Plants monoecious or dioecious, the staminate spikes pectinate, the
 pistillate spikes strikingly different in appearance.
 Staminate spikelets 1-flowered; rachis of the pistillate spikes not
 thickened or indurate.
 Pistillate spikes reduced to one spikelet; rudiment 3-awned,
 the rachilla adnate to the palea of the fertile floret. 157. OPIZIA.
 Pistillate spikes with 3-5 spikelets; rudiment composed of 2
 or 3 several-awned, reduced florets, the rachilla free. 158. PRINGLEOCHLOA.
 Staminate spikelets 2-3-flowered; rachis of the pistillate spikes
 thickened and indurate, together with the second glumes
 forming a false involucre around the florets. 159. BUCHLOË.
 Plants with unisexual, rarely perfect florets, the staminate and pistil-
 late in the same spike or the spike entirely staminate, never enti-
 rely pistillate. 160. CATHESTECUM.
 Inflorescence very small, enclosed in the broad crowded sheaths at the ends
 of the branches. 161. MUNROA.

137. MICROCHLOA R. Br. Prodr. 208. 1810.

Densely tufted annuals or perennials with short narrow or involute blades and solitary slender arcuate spikes. Spikelets 1-flowered, sessile in two rows on one side of a narrow flattened rachis, the rachilla disarticulating above the glumes; glumes subequal, longer than the floret, acute, 1-nerved; floret with a soft pointed callus; lemma thin, 3-nerved, flabellate, ciliate on the margins; palea narrow, a little shorter than the lemma, ciliate on the keels.

Type species, *Microchloa setacea* R. Br.

1. *Microchloa Kunthii* Desv. Opusc. 75. 1831.

Paspalum tenuissimum M. E. Jones, Contr. W. Bot. 18: 24. 1935. (Baja California, Jones 27584.)

Perennial; culms very slender, erect in small dense tufts, 10-30 cm. tall; sheaths, except the lowermost, much shorter than the internodes, scaberulous; ligule ciliate, 1-1.5 mm. long; blades firm, flat or usually folded, with thick white scabrous margins, those of the culm 1-2.5 cm. long, those of the innovations as much as 6 cm. long, 1-1.5 mm. wide; spike 6-15 cm. long,

arcuate, the rachis ciliate; spikelets 2.5–3.5 mm. long; lemma 2–2.5 mm. long, pilose on the midnerve, the margins densely ciliate with hairs about 1 mm. long.

TYPE LOCALITY: Omitlan, Mexico (*Humboldt & Bonpland*.)

DISTRIBUTION: Sterile ground and rocky hills, Mexico to Argentina.

138. CYNODON Rich.; Pers. Syn. Pl. 1: 85. 1805.

Capriola Adans. Fam. Pl. 2: 31, 532. 1763. (Type species, *Panicum Dactylon* L.)

Fibichia Koeler, Descr. Gram. 308. 1802. (Type species, *Panicum Dactylon* L.)

Stoloniferous perennials with short blades and few to several slender digitate spikes. Spikelets 1-flowered, sessile in two rows on one side of the narrow triangular rachis, the rachilla disarticulating above the glumes, prolonged beyond the spikelet in a naked stipe, sometimes bearing a rudimentary floret; glumes subequal, acuminate, 1-nerved, the first lunate, the second lanceolate; lemma acute, awnless, 3-nerved, pubescent on the nerves; palea narrow, acute, as long as the lemma.

Type species, *Panicum Dactylon* L.

1. *Cynodon Dactylon* (L.) Pers. Syn. Pl. 1: 85. 1805.

Panicum Dactylon L. Sp. Pl. 58. 1753. (Type from Southern Europe.)

Digitaria Dactylon Scop. Fl. Carn. ed. 2. 1: 53. 1772. (Based on *Panicum Dactylon* L.)

Dactilon officinale Vill. Hist. Pl. Dauph. 2: 69. 1787. (Based on *Panicum Dactylon* L.)

?*Cynosurus uniflorus* Walt. Fl. Car. 82. 1788. (Type from South Carolina.)

Paspalum Dactylon Lam. Tab. Encyc. 1: 176. 1791. (Based on *Panicum Dactylon* L.)

Digitaria littoralis Salisb. Prodr. 19. 1796. (Based on *Panicum Dactylon* L.)

Milium Dactylon Moench, Meth. Suppl. 67. 1802. (Based on *Panicum Dactylon* L.)

Fibichia umbellata Koeler, Descr. Gram. 308. 1802. (Based on *Panicum Dactylon* L.)

Digitaria stolonifera Schrad. Fl. Germ. 1: 163. 1806. (Based on *Panicum Dactylon* L.)

Cynodon maritimus H.B.K. Nov. Gen. & Sp. 1: 170. 1816. (Type from Peru, *Humboldt & Bonpland*.)

Cynodon tenuis Trin. in Spreng. Neue Entdeck. 2: 63. 1821. (Type from North America.)

Chloris cynodon Trin. Gram. Unifl. 229. 1824. (Based on *Cynodon Dactylon* Pers.)

Digitaria maritima Spreng. Syst. 1: 272. 1825. (Based on *Cynodon maritimus* H.B.K.)

Cynodon erectus Presl, Rel. Haenk. 1: 290. 1830. (Type from Mexico, *Haenke*.)

Capriola Dactylon Kuntze, Rev. Gen. Pl. 2: 764. 1891. (Based on *Panicum Dactylon* L.)

Fibichia Dactylon G. Beck, Wiss. Mitt. Bosn. Herzeg. 9: 436. 1904. (Based on *Panicum Dactylon* L.)

Cynodon Dactylon var. *maritimus* Hack. in R. E. Fries, Ark. Bot. 8: 40. 1909. (Based on *C. maritimus* H.B.K.)

Capriola Dactylon maritima Hitchc. Bull. U. S. Dep. Agr. 772: 179. 1920. (Based on *Cynodon maritimus* H.B.K.)

Rhizomatous, stoloniferous, widely creeping; culms wiry, compressed, 10–40 cm. tall; sheaths usually overlapping, keeled, glabrous or sparsely pilose at the throat; ligule membranaceous, minutely erose, 0.2–0.3 mm. long; blades flat, 2–20 cm. long (usually 5–10 cm.), 2–4 mm. wide, scabrous, especially on the margins, sometimes sparsely pilose; spikes 4–7, slender, arcuate, 2–7 cm. long; spikelets 2–3 mm. long.

TYPE LOCALITY: Europe.

DISTRIBUTION: A common weed in open ground throughout the warmer regions of the world.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 171; Bull. U. S. Dep. Agr. 772: f. 105; Britt. & Brown, Ill. Fl. f. 400; ed. 2. f. 537; Hitchc. Man. f. 1031.

139. SPARTINA Schreb.; Gmel. Syst. Nat. ed. 13. 2: 123. 1791.

Trachynotia Michx. Fl. Bor. Am. 1: 63. 1803. (Type species, *T. cynosuroides* Michx.)

Limnethis Pers. Syn. Pl. 1: 72. 1805. (Type species, *L. pungens* Pers. [*Spartina maritima* (Curtis) Fernald].)

Coarse, usually tall, perennial grasses, mostly with strong scaly rhizomes, tough, flat or involute blades, and several to numerous, appressed, ascending or spreading spikes racemose on a common axis, the rachis produced beyond the spikelets. Spikelets 1-flowered, laterally compressed, sessile in two rows on one side of a narrow flattened rachis, disarticulating below the glumes; glumes unequal, the first shorter, the second longer than the floret, keeled, 1-nerved, subobtusely acute or acuminate, rarely awned, usually pilose or hispid on the keel; lemma firm but thinner than the glumes, 1-nerved, or 3-nerved with the lateral nerves obscure, keeled,

subobtuse, more or less pilose or hispid on the keel; palea as long as or longer than the lemma, broadly acute with thin, very wide margins.

Type species, *Spartina Schreberi* Gmel.

Blades flat, 5–12 mm. wide, glabrous on both surfaces (see also *S. caespitosa*).

Glumes glabrous, sometimes sparsely pilose or hirsute on the keels; spikelets usually not closely imbricate.

Spikes crowded, appressed, 5–7 cm. long.

Spikes relatively distant, ascending, 5–15 cm. long.

Glumes conspicuously scabrous or hispid on the keels; spikelets usually closely imbricate.

Glumes awnless.

Glumes awned, the awn of the second as much as 7 mm. long.

Blades usually involute, 1–5 mm. wide (usually flat in *S. gracilis*; some of the blades in *S. caespitosa* as much as 7 mm. wide), scabrous on the upper surface, glabrous on the lower.

Spikes usually numerous, appressed, crowded in a long dense cylindrical inflorescence.

Spikes 2–12 (usually about 6), scattered, often spreading.

Culms densely caespitose, without widely spreading rhizomes, 1–2 m tall (see also *S. caespitosa*).

Culms mostly solitary or few, less than 1 meter tall, with numerous widely spreading rhizomes.

Second glume 12–16 mm. long, aristate.

Second glume less than 10 mm. long, acute.

Blades usually flat; glumes conspicuously hispid-ciliate on the keels; spikes several, appressed.

Blades usually involute; glumes scabrous on the keels; spikes few, ascending to spreading.

1. *S. foliosa*.

2. *S. alterniflora*.

3. *S. cynosuroides*.

4. *S. pectinata*.

5. *S. Spartinae*.

6. *S. Bakeri*.

7. *S. caespitosa*.

8. *S. gracilis*.

9. *S. patens*.

1. *Spartina foliosa* Trin. Mém. Acad. St.-Pétersb. VI.

6²: 114. 1840.

Spartina leiantha Benth. Bot. Voy. Sulph. 56. 1844. (Type from Baja California.)

Spartina densiflora subvar. *Brongniartii* f. *acuta* St. Yves, Candollea 5: 76, 81. 1932. (Type from Eureka, California, Heller 13871.)

Culms 70–100 cm. tall, erect from comparatively slender spreading rhizomes, rooting at the lower nodes, leafy to the summit; sheaths crowded, much longer than the internodes, rounded, usually succulent; ligule ciliate, 1–2 mm. long; blades 15–40 cm. long, 5–10 mm. wide at the base, usually stiffly ascending, glabrous on both surfaces, the margins scaberulous; panicle spike-like, cylindrical, 15–20 cm. long, usually partly enclosed in the upper sheath; spikes several to numerous, sessile, crowded, at least at the summit of the panicle, the lower ones 5–7 cm. long, the rachis glabrous; spikelets distant, at least in the lower spikes, closely appressed; first glume half to three fourths as long as the floret, the keel hirsute in the lower half; second glume acute, as long as or distinctly exceeding the lemma, the keel hirsute, the margins ciliate in the lower half; lemma 8–10 mm. long, rather thin, subobtuse, obscurely lobed, glabrous except for the sparsely ciliate margins; palea narrowed at the summit, exceeding the lemma.

TYPE LOCALITY: California.

DISTRIBUTION: Salt marshes near the Pacific coast, San Francisco to Baja California.

ILLUSTRATION: Hitchc. Man. f. 1042.

2. *Spartina alterniflora* Loisel. Fl. Gall. 719. 1807.

Dactylis maritima Walt. Fl. Car. 77. 1788. (Type from South Carolina.) Not *D. maritima* Curtis, 1787.

Trachynotia alterniflora DC. Fl. Fr. 6: 279. 1815. (Based on *Spartina alterniflora* Loisel.)

Spartina glabra Muhl.; Ell. Bot. S. C. & Ga. 1: 95. 1816.

Limnethis glabra Nutt. Gen. 1: 38, name only 1818; Eaton & Wright, N. Am. Bot. 301. 1840. (Presumably based on *Spartina glabra* Muhl.)

Spartina laevigata Bosc; Link, Jahrb. Gewächsk. 1³: 92. 1820. (Type from North America, Bosc.)

Spartina brasiliensis Raddi, Agrost. Bras. 21. 1823. (Type from Rio de Janeiro, Brazil.)

Spartina stricta var. *alterniflora* A. Gray, Man. ed. 2. 552. 1856. (Based on *S. alterniflora* Loisel.)

Spartina stricta var. *glabra* A. Gray, Man. ed. 2. 552. 1856. (Based on *S. glabra* Muhl.)

Spartina stricta maritima Scribn. Mem. Torrey Club 5: 45. 1894. (Based on *Dactylis maritima* Walt.)

Spartina glabra alterniflora Merrill, Bull. U. S. Dep. Agr. Pl. Ind. 9: 9. 1902. (Based on *Spartina alterniflora* Loisel.)

Spartina glabra pilosa Merrill, Bull. U. S. Dep. Agr. Pl. Ind. 9: 9. 1902. (Type from Atlantic City, New Jersey, Scribner in 1895.)

Spartina alterniflora var. *glabra* Fernald, Rhodora 18: 178. 1916. (Based on *S. glabra* Muhl.)

- Spartina alterniflora* var. *pilosa* Fernald, *Rhodora* 18: 179. 1916. (Based on *S. glabra pilosa* Merrill.)
Spartina maritima subsp. *glabra* St. Yves, *Candollea* 5: 24, 48. 1932. (Based on *Spartina glabra* Muhl.)
Spartina maritima subsp. *glabra* var. *alterniflora* Merrill; St. Yves, *Candollea* 5: 25, 53. 1932. (Based on *S. alterniflora* Loisel.)
Spartina maritima subsp. *glabra* var. *alterniflora* f. *gracilis* St. Yves, *Candollea* 5: 54. 1932. (Localities cited, England, France, Newfoundland.)
Spartina maritima subsp. *glabra* var. *brasiliensis* St. Yves, *Candollea* 5: 25, 56. 1932. (Based on *Spartina brasiliensis* Raddi.)
Spartina maritima subsp. *glabra* var. *brasiliensis* subvar. *fallax* St. Yves, *Candollea* 5: 57. 1932. (Localities cited, British Guiana, Brazil.)
Spartina maritima subsp. *glabra* var. *brasiliensis* subvar. *Raddii* St. Yves, *Candollea* 5: 56. 1932. (Based on *Spartina brasiliensis* Raddi.)
Spartina maritima subsp. *glabra* var. *glabra* A. Gray; St. Yves, *Candollea* 5: 24, 49. 1932. (Based on *S. glabra* Muhl.)
Spartina maritima subsp. *glabra* var. *glabra* subvar. *pilosa* St. Yves, *Candollea* 5: 25, 51. 1932. (Based on *S. glabra pilosa* Merr.)
 X*Spartina Merrillii* A. Chevalier, *Bull. Soc. Bot. France* 80: 787. 1933. (Type from Long Island, New York, *Bicknell 11300*.)

Culms 0.5–2.5 meters tall, erect in small tough clumps from usually widely spreading rhizomes, the internodes of the rhizomes comparatively long with inflated sheaths; sheaths much longer than the internodes, rounded, glabrous, the lower ones crowded, succulent; ligule ciliate, 1–2 mm. long; blades 15–60 cm. long, 5–12 mm. wide at the base, flat or becoming loosely rolled, acuminate, glabrous or the margins sparsely scabrous; panicle mostly 14–35 cm. long, rarely only 10 cm. long in depauperate specimens; spikes 5–12, rarely 1–4, 5–15 cm. long, narrowly ascending or appressed, sessile or sometimes peduncled, the rachis glabrous or sparsely hirsute on the margins; spikelets appressed, usually rather distant, or sometimes closely imbricate; glumes glabrous or rarely pilose or hispid on the keels and margins, the first narrow, acute, half to three fourths as long as the lemma, the second subobtusate, often apiculate, longer than the lemma; lemma 8–12 mm. long, glabrous or sparsely pilose; palea a little longer than the lemma, subobtusate.

TYPE LOCALITY: France.

DISTRIBUTION: Salt marshes along the coast, Quebec and Newfoundland, and southward to Florida and Texas; also along Atlantic coast of Europe; Trinidad; British Guiana to Argentina.

ILLUSTRATIONS: *Ell. Bot. S. C. & Ga.* 1: pl. 4, f. 2 (as *Spartina glabra*); Britt. & Brown, *Ill. Fl. f.* 405; ed. 2, f. 542; Hitchc. *Man. f.* 1043.

3. *Spartina cynosuroides* (L.) Roth, *Catalecta Bot.* 3: 10. 1806.

Dactylis cynosuroides L., *Sp. Pl.* 71. 1753. (Localities cited, Virginia and Canada.)

Trachynotia polystachya Michx. *Fl. Bor. Am.* 1: 64. 1803. (Type from South Carolina, *Michaux*.)

Trachynotia cynosuroides Michx. *Fl. Bor. Am.* 1: 64. 1803. (Based on *Dactylis cynosuroides* L. but misapplied to *S. pectinata*.)

Paspalum cynosuroides Brot. *Fl. Lusit.* 1: 83. 1804. (Based on *Dactylis cynosuroides* L.)

Limnetis cynosuroides Rich.; *Pers. Syn. Pl.* 1: 72. 1805. (Based on *Dactylis cynosuroides* L.)

Limnetis polystachya Rich.; *Pers. Syn. Pl.* 1: 72. 1805. (Based on *Trachynotia polystachya* Michx.)

Spartina polystachya Beauv. *Agrost.* 25, 178, 179. 1812. (Presumably based on *Trachynotia polystachya* Michx.)

Cynodon cynosuroides Rasp. *Ann. Sci. Nat.* 5: 303. 1825. (Based on *Spartina cynosuroides* Roth.)

Spartina cynosuroides var. *polystachya* Beal, *Grasses N. Am.* 2: 398. 1896. (Based on *Trachynotia polystachya* Michx.)

Culms as much as 3 meters tall, stout, erect from coarse, widely spreading rhizomes; sheaths much longer than the internodes, rounded, the collar more or less pubescent; ligule ciliate, 1–3 mm. long; blades elongate, attenuate, flat, 1–2.5 cm. wide at the somewhat rounded base, glabrous on both surfaces, the margins scabrous; panicle 15–35 cm. long; spikes numerous, narrowly ascending to somewhat spreading, crowded, the lower mostly 8–15 cm. long, the peduncles as much as 4 cm. long, the rachis scabrous on the margins; spikelets crowded; glumes conspicuously hispid on the keels, scabrous on the margins, the first acute, half as long as the lemma, the second acuminate, awnless, much longer than the lemma; lemma about 8 mm. long, scabrous at least on the upper half, hispid on the keel, the tip with two shallow rounded lobes; palea exceeding the lemma, narrowed toward the summit, more or less scabrous.

TYPE LOCALITY: Virginia.

DISTRIBUTION: Brackish marshes along the coast, Massachusetts to Florida and Texas; Bahama Islands.

ILLUSTRATIONS: *Bull. U. S. Dep. Agr. Agrost.* 7: f. 172; Britt. & Brown, *Ill. Fl. f.* 402; ed. 2, f. 539; Hitchc. *Man. f.* 1040.

4. *Spartina pectinata* Link, Jahrb. Gewächsk. 1³: 92. 1820.

- Spartina cynosuroides* var. *aureo-marginata* Irving, Gard. Chron. III. 38: 372. 1905. (Type grown at Kew Gardens, received from New York Botanical Garden.)
- Spartina Michauxiana* Hitchc. Contr. U. S. Nat. Herb. 12: 153. 1908. (Based upon the plant described by Michaux as *Trachynotia cynosuroides*, but the name based on *Dactylis cynosuroides* L.)
- Spartina Michauxiana* var. *Suttiei* Farwell, Rep. Mich. Acad. 21: 352. 1920. (Type from Orchard Lake, Michigan, Suttie.)
- Spartina Michauxiana* var. *tenuior* Farwell, Rep. Mich. Acad. 21: 352. 1920. (Type from River Rouge, Michigan, [Farwell] 5138.)
- Spartina cynosuroides* var. *Michauxiana* St. Yves, Candollea 5: 58. 1932. (Based on *S. Michauxiana* Hitchc.)
- Spartina cynosuroides* var. *Michauxiana* f. *major* St. Yves, Candollea 5: 61, 62. 1932. (Localities cited, Canada, *Victorin* 11358; *Victorin* & *Germain* 9055; also Nova Scotia, Newfoundland, Massachusetts, Ohio, Illinois, Minnesota, and Missouri.)
- Spartina cynosuroides* × *gracilis* St. Yves, Candollea 5: 66. 1932. (Type from Oregon, Ballards Landing, *Cusick* 221 in 1890 [error for 2221 in 1899].)
- Spartina pectinata* var. *Suttiei* Fernald, Rhodora 35: 260. 1933. (Based on *S. Michauxiana* var. *Suttiei* Farwell.)

Culms 0.6–2 meters tall, erect from stout, widely spreading rhizomes; sheaths much longer than the internodes, rounded on the back or obscurely keeled at the summit, glabrous or more or less pubescent at the mouth and on the collar; ligule ciliate, 1–3 mm. long; blades elongate, 5–12 mm. wide at the base, attenuate, glabrous on both surfaces, the margins very hispid; spikes 5–20 (rarely 30), appressed or narrowly ascending, the lower 5–12 cm. long, gradually shorter upward, the peduncles mostly 1–3 cm. long, the rachis hispid-ciliate on the margins; spikelets usually closely appressed; glumes conspicuously hispid on the keels, the first narrow, acuminate, awned, about as long as the lemma, the second much broader, its body a little longer than the lemma, pilose on the margins, the coarse scabrous awn 1–7 mm. long; lemma 7–9 mm. long, hispid on the keel, otherwise glabrous, minutely lobed; palea exceeding the lemma, minutely lobed, scabrous toward the summit.

TYPE LOCALITY: North Carolina (*Bosc*).

DISTRIBUTION: Fresh or brackish marshes, Newfoundland to Washington and Oregon, and southward to North Carolina, Texas, and New Mexico.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 173; Bull. U. S. Dep. Agr. 772: f. 109; Britt. & Brown, Ill. Fl. f. 401; ed. 2. f. 538; Hitchc. Man. f. 1038.

5. *Spartina Spartinae* (Trin.) Merrill; Hitchc. Contr. U. S. Nat. Herb. 17: 329. 1913.

- Vilfa Spartinae* Trin. Mém. Acad. St.-Pétersb. VI. 6²: 82. 1840. (Type from Texas.)
- Spartina junciformis* Engelm. & Gray, Bost. Jour. Nat. Hist. 5: 238. 1845. (Type from Texas, *Lindheimer* [207].)
- Spartina Gouini* Fourn. Mex. Pl. Gram. 2: 135. 1886. (Type from Vera Cruz, *Gouin* 72.)
- Spartina multiflora* Vasey; Beal, Grasses N. Am. 2: 400, as synonym of *S. junciformis* Engelm. & Gray. 1896.
- Spartina Pittieri* Hack. Oesterr. Bot. Zeits. 52: 237. 1902. (Type from Costa Rica, *Pittier* 4209.)
- Spartina argentinensis* L. Parodi, Revista Fac. Agron. La Plata 2: 30. 1919. (Type from Argentina.)
- Spartina densiflora* var. *junciformis* St. Yves, Candollea 5: 26, 77. 1932. (Based on *S. junciformis* Engelm. & Gray.)
- Spartina densiflora* var. *junciformis* subvar. *argentinensis* St. Yves, Candollea 5: 26, 79. 1932. (Based on *S. argentinensis* L. Parodi.)

Culms 30–175 cm. tall, erect in usually large dense clumps; sheaths longer than the internodes, rounded on the back; ligule densely ciliate, 1 mm. long; blades elongate, 3–5 mm. wide at the base, narrower than the mouth of the sheath, often tortuous, pungent, the lower surface glabrous, the upper surface and the margins scabrous; panicle 10–40 cm. long, usually dense, cylindrical; spikes numerous, 2–8 cm. long, sessile, appressed, the rachis scabrous on the margins; spikelets 6–7 mm. long, crowded; glumes acute to obtuse, sometimes minutely lobed and mucronate, scabrous on the keels, the first a little shorter than the lemma, or rarely only half as long, the second a little longer than the lemma; lemma 5–6 mm. long, obtuse, scabrous on the keel; palea equal to the lemma.

TYPE LOCALITY: Texas.

DISTRIBUTION: Marshes, swamps, and wet ground near the coast, Florida to Texas, eastern Mexico, and Costa Rica; also in Argentina.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 176; Hitchc. Man. f. 1045.

6. *Spartina Bakeri* Merrill, Bull. U. S. Dep. Agr. Pl. Ind.

9: 14. 1902.

Spartina juncea var. *Bakeri* St. Yves, Candollea 5: 27, 91. 1932. (Based on *S. Bakeri* Merrill.)

Culms 1-2 meters tall, in large dense very tough clumps, erect from very short knotty rhizomes, sometimes with fascicles of branches at the nodes; sheaths usually much longer than the internodes, rounded on the back; ligule ciliate, 0.5-2 mm. long; blades elongate, 4-8 mm. wide at the base, firm, involute or rarely flat, glabrous on the lower surface, very scabrous on the upper surface and on the margins; panicle 10-20 cm. long; spikes 5-12, 3-6 cm. long, approximate but not crowded, appressed or narrowly ascending, sessile, or the lower with a peduncle as much as 1 cm. long, the rachis glabrous or very sparsely scabrous on the margins; spikelets closely appressed, 6-8 mm. long; glumes acute or acuminate, scabrous, especially on the keels, the first about half as long as the lemma, the second exceeding it; lemma 5-6 mm. long, subacute or obtuse, shallowly lobed, more or less scabrous on the keel and on the margins; palea slightly exceeding the lemma.

TYPE LOCALITY: Lake Ola, Florida (*C. H. Baker 14*).

DISTRIBUTION: Sandy or marshy ground, usually near the coast, South Carolina, Georgia, and Florida.

ILLUSTRATION: Hitchc. Man. f. 1047.

7. *Spartina caespitosa* A. A. Eaton, Bull. Torrey Club

25: 338. 1898.

Spartina patens var. *caespitosa* (A. A. Eaton) Hitchc. Rhodora 8: 210. 1906. (Based on *S. caespitosa* A. A. Eaton).

Culms 70-100 cm. tall, erect from coarse widely spreading rhizomes or sometimes tufted, the rhizomes nearly wanting; sheaths mostly longer than the internodes or the upper shorter, rounded; ligule ciliate, 1 mm. long; blades 10-40 cm. long, 3-7 mm. wide, flat or becoming involute, attenuate, glabrous on the lower surface, scabrous on the upper surface and on the margins; spikes 2-7, 3-9 cm. long, finally spreading, rather distant, the peduncles 0.5-2 cm. long, the rachis scabrous on the margins; glumes acuminate, aristate, conspicuously hispid-ciliate on the keels, the first 5-6 mm. long, the second 12-16 mm. long; lemma about 8 mm. long, minutely lobed, hispid-ciliate toward the summit; palea a little longer than the lemma.

TYPE LOCALITY: Seabrook, New Hampshire (*A. A. Eaton*).

DISTRIBUTION: Salt marshes, near the coast, New Hampshire to Maryland.

8. *Spartina gracilis* Trin. Mém. Acad. St.-Pétersb. VI.6²: 110. 1840.

Culms 45-100 cm. tall, usually solitary, erect from widely spreading rhizomes, the scales of the rhizomes somewhat inflated; sheaths longer than the internodes, rounded, glabrous, rather soft; ligule ciliate, 1 mm. long; blades 15-20 cm. long, 2-5 mm. wide, flat or becoming involute, glabrous on the lower surface, very scabrous on the upper surface and on the margins; panicle 10-25 cm. long; spikes 4-12, 2-8 cm. long, sessile, usually appressed, crowded or sometimes rather distant, the rachis hispid-ciliate; spikelets 6-10 mm. long, crowded, ascending; glumes acute or mucronate, conspicuously hispid-ciliate on the keels, the first narrow, half as long as the lemma, the second a little longer than the lemma; lemma obtuse, shallowly lobed, hispid-ciliate on the keel, sparsely scabrous on the margins; palea about as long as the lemma.

TYPE LOCALITY: North America.

DISTRIBUTION: Saskatchewan to British Columbia, and southward to Colorado, Eastern Washington and Arizona.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 175; Britt. & Brown, Ill. Fl. f. 404; ed. 2. f. 541; Hitchc. Man. f. 1048.

9. *Spartina patens* (Ait.) Muhl. Descr. Gram. 55. 1817.

Dactylis patens Ait. Hort. Kew. 1: 104. 1789. (Type grown in England, seed from North America.)
Trachynotia juncea Michx. Fl. Bor. Am. 1: 64. 1803. (Localities cited, South Carolina and Georgia, Michaux.)

Limnethis juncea Rich.; Pers. Syn. Pl. 1: 72. 1805. (Based on *Trachynotia juncea* Michx.)

Spartina pumila Roth, Catalecta Bot. 3: 10. 1806. (Type from New York.)

Spartina juncea Willd. Enum. 81. 1809. (Based on *Trachynotia juncea* Michx.)

Spartina patens var. *juncea* Hitchc. Rhodora 8: 210. 1906. (Based on *Trachynotia juncea* Michx.)

Spartina juncea var. *juncea* subvar. *americana* St. Yves, Candollea 5: 27, 84. 1932. (Based on *S. juncea* Willd.)

Spartina juncea var. *patens* St. Yves, Candollea 5: 27, 86. 1932. Based on *Dactylis patens* Ait.

Culms 30–100 cm. tall, slender, erect from widely spreading rhizomes, the rhizomes with relatively long internodes, the scales not inflated; sheaths rounded, longer than the internodes, glabrous; ligule ciliate, 0.5 mm. long; blades 10–25 cm. long, 1–4 mm. wide, involute or rarely flat, glabrous on the lower surface, scabrous on the upper surface and on the margins; spikes 2–6, 2–6 cm. long, appressed or spreading, sessile or with peduncles 3–5 mm. long, the rachis scabrous on the margins; spikelets 7–10 mm. long (rarely as much as 12 mm.), ascending; glumes acute or acuminate, scabrous on the keels, the first about half as long as the lemma, the second as long as or longer than the lemma; lemma 5–7 mm. long, obtuse, shallowly lobed, scabrous on the keel at least near the summit; palea a little longer than the lemma.

TYPE LOCALITY: North America.

DISTRIBUTION: Salt marshes and sandy ground, near the coast, Quebec to Florida and Texas; also inland in New York and Michigan; Yucatan and Honduras; West Indies.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 174; Britt. & Brown, Ill. Fl. f. 403; ed. 2. f. 540; Hitchc. Man. f. 1050.

140. *BECKMANNIA* Host, Gram. Austr. 3: 5. pl. 6. 1805.

Leafy annual or perennial grasses with numerous short thick spikes crowded in a dense elongate panicle. Spikelets 1-flowered or 2-flowered, subsessile, imbricate, in two rows on one side of a narrow flattened rachis, suborbicular, falling entire, the rachilla disarticulating below the glumes; glumes equal, acute or apiculate, naviculate, inflated, enclosing the florets; lemma equaling or slightly exceeding the glumes, crescent-shaped, acuminate, 5-nerved, glabrous; palea subacute, a little shorter than the lemma.

Type species, *Phalaris erucaeformis* L.

1. *Beckmannia syzigachne* (Steud.) Fernald, Rhodora 30: 27. 1928.

Panicum syzigachne Steud. Flora 29: 19. 1846.

Beckmannia erucaeformis var. *uniflora* Scribn.; A. Gray, Man. ed. 6. 628. 1890. (Localities cited, Iowa, Minnesota and westward.)

Beckmannia erucaeformis var. *baicalensis* Kuznetsov, Bull. Angew. Bot. 6: 584. 1913. (Type from Siberia.)

Beckmannia baicalensis Hultén, Sv. Vet. Akad. Handl. III. 5: 119. 1927. (Based on *B. erucaeformis* var. *baicalensis* Kuznetsov.)

Annual; culms rather coarse, erect, 30–100 cm. tall, glabrous or scaberulous; sheaths usually longer than the internodes, rounded on the back, scaberulous; ligule thin, white, 3–5 mm. long; blades 8–20 cm. long, 3–10 mm. wide, flat, firm, scabrous, especially on the margins; panicle erect, 10–25 cm. long; the branches appressed, 1–5 cm. long, naked at the base; spikes 1–2 cm. long, loosely appressed; spikelets 1-flowered, 3 mm. long, the glumes transversely wrinkled, the acuminate apex of the lemma usually protruding.

TYPE LOCALITY: Japan.

DISTRIBUTION: Wet ground, marshes, and ditches, Manitoba to Alaska, and southward to New York, Illinois, New Mexico, and California; also in Asia.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 208; Bull. U. S. Dep. Agr. 772: f. 108; Britt. & Brown, Ill. Fl. f. 414; ed. 2. f. 551; Hitchc. Man. f. 1036.

141. *SCHEDONNARDUS* Steud. Syn. Gram. 146. 1854.

Spirochloë Lunell, Am. Midl. Nat. 4: 220. 1915. (Based on *Schedonnardus* Steud.)

Slender, freely branching perennial grasses with relatively short basal blades and few to several, stiffly spreading spikes distant on a slender triangular axis. Spikelets 1-flowered,

sessile, appressed in one row on each of two sides of a triangular rachis; glumes 1-nerved, abruptly narrowed into stiff awn-points, the second longer than the first; lemma 3-nerved, acuminate, a little longer than the glumes, awnless.

Type species, *Schedonnardus texanus* Steud.

1. *Schedonnardus paniculatus* (Nutt.) Trel. in Bran. & Cov.

Rep. Geol. Surv. Ark. 1888⁴: 236. 1891.

Lepturus paniculatus Nutt. Gen. 1: 81. 1818.

Rottboellia paniculata Spreng. Syst. 1: 300. 1825. (Based on *Lepturus paniculatus* Nutt.)

Schedonnardus texanus Steud. Syn. Gram. 146. 1854. (Type from Texas, Drummond 360.)

Spirochloë paniculata Lunell, Am. Midl. Nat. 4: 220. 1915. (Based on *Lepturus paniculatus* Nutt.)

Culms erect from a decumbent base, freely branching at the lower nodes, 15–50 cm. tall, leaves crowded toward the base; sheaths keeled, scaberulous; ligule membranaceous, 2 mm. long; blades firm, flat, wavy, scabrous on the margins, 2–5 cm. long, 1 mm. wide; inflorescence 10–30 cm. long, the axis straight or usually curved; spikes stiffly and abruptly spreading, the lowermost 6–9 cm. long, the upper successively shorter; spikelets 4 mm. long, scarcely overlapping; glumes very scabrous on the keels, the first 2 mm. long, the second 3–3.5 mm. long; lemma about 4 mm. long, acute, scabrous toward the tip, more or less pubescent near the base.

TYPE LOCALITY: Mandan, North Dakota.

DISTRIBUTION: Plains and prairies, Minnesota to Saskatchewan and Montana, and southward to Louisiana and Arizona; also in Argentina.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12²: pl. 26 (as *S. texanus*); Bull. U. S. Dep. Agr. Agrost. 7: f. 193; Bull. U. S. Dep. Agr. 772: f. 107; Britt. & Brown, Ill. Fl. 410; ed. 2. f. 547; Hitchc. Man. f. 1034.

142. *WILLKOMMIA* Hack. Verh. Bot. Ver. Brand. 30: 145. 1888.

Densely tufted, annual or perennial grasses with slender, usually leafy culms and few to several straight appressed spikes scattered along an elongate flattened axis; spikelets 1-flowered, subsessile, on two sides of a slender triangular rachis; first glume hyaline, nerveless, obtuse, shorter than the spikelet; second glume acute, 3-nerved, as long as the spikelet; floret shortly stipitate; lemma 5-nerved, acute, awnless, rather densely pilose on the lateral internerves and margins; palea a little shorter than the lemma, obtuse, the nerves near the margins, densely villous on the nerves and on the middle of the back.

Type species, *Willkommia sarmentosa* Hack.

1. *Willkommia texana* Hitchc. Bot. Gaz. 35: 283. 1903.

Perennial; culms in small rather hard tufts, 15–50 cm. tall, erect, glabrous; sheaths mostly shorter than the internodes, rounded, glabrous; blades 6–15 cm. long or the uppermost reduced, 1–3 mm. wide, flat or loosely involute, straight or flexuous, the firm white margins sparsely scabrous or hispid; inflorescence 6–23 cm. long, partly included in the upper sheath; spikes 3–12, 2–5 cm. long, straight, appressed or narrowly ascending; spikelets loosely appressed; first glume 2.5 mm. long, obtuse, hyaline, glabrous; second glume 3.5 mm. long, acute, scabrous toward the tip; lemma acute, nearly as long as the second glume.

TYPE LOCALITY: Ennis, Texas (*J. G. Smith 1897*).

DISTRIBUTION: Open hardpan and sandy loam, central and southern Texas.

ILLUSTRATIONS: Bot. Gaz. 35: 282. f. 1; Bull. U. S. Dep. Agr. 772: f. 106; Hitchc. Man. f. 1033.

143. *DACTYLOCTENIUM* Willd. Enum. 1029. 1809.

Annual grasses with comparatively short broad blades and 2–several short, thick, digitate, ascending or spreading spikes, the rachis extending beyond the spikelets in a naked point; spikelets compressed, 3–5-flowered, alternate in two rows on one side of the flattened rachis, horizontally spreading; glumes subequal, 1-nerved, the first crescent-shaped, acute, awnless, the second obtuse, bearing a short stout awn; lemmas thin, acute, obovate, 3-nerved, the lateral nerves obscure, awn-pointed; palea about as long as the lemma.

Type species, *Cynosurus aegyptius* L.

1. *Dactyloctenium aegyptium* (L.) K. Richt. Pl. Eur. 1: 68. 1890.

- Cynosurus aegyptius* L. Sp. Pl. 72. 1753. (Localities cited, Africa, Asia, America.)
Aegilops saccharinum Walt. Fl. Car. 249. 1788. (Type from South Carolina.)
Eleusine aegyptiaca Desf. Fl. Atlant. 1: 85. 1798. (Based on *Cynosurus aegyptius* L.)
Eleusine pectinata Moench. Meth. Suppl. 68. 1802. (Based on *Cynosurus aegyptius* L.)
Chloris mucronata Michx. Fl. Bor. Am. 1: 59. 1803. (Type from Carolina, Michx.)
Eleusine aegyptia Pers. Syn. Pl. 1: 87. 1805. (Based on *Cynosurus aegyptius* L.)
Dactyloctenium aegyptiacum Willd. Enum. 1029. 1809. (Based on *Cynosurus aegyptius* L.)
Dactyloctenium mucronatum Willd. Enum. 1029. 1809. (Based on *Chloris mucronata* Michx.)
Eleusine mucronata Stokes, Bot. Mat. Med. 1: 150. 1812. (Type from Jamaica, Broughton.)
 Not *E. mucronata* Michx. 1803.
Rabdochloa mucronata Beauv. Agrost. 84, 158, 176. 1812. (Presumably based on *Chloris mucronata* Michx.)
Eleusine cruciata Ell. Bot. S. C. & Ga. 1: 176. 1816. (Type presumably from South Carolina.)
Dactyloctenium meridionale Hamilt. Prodr. 6. 1825. (Localities cited, West Indies and tropical America.)
Dactyloctenium mucronatum var. *erectum* Fourn. Mex. Pl. Gram. 2: 144. 1886. (Localities cited, Mexico, Gouin 68; Karwinsky 989, 989b.)

Culms branching, decumbent, spreading at the base and rooting at the lower nodes, the ascending ends 20–40 cm. long; sheaths overlapping, compressed, glabrous; ligule membranaceous, minutely erose, about 0.3 mm. long; blades flat, mostly 5–10 cm. long, 2–5 mm. wide, scabrous and papillose on the margins, otherwise glabrous or nearly so; spikes 2–5, mostly 2–5 cm. long; spikelets pectinate, about 3 mm. long; first glume 1.5 mm. long, acute, scabrous on the keel; second glume a little longer than the first with an awn 1–2.5 mm. long from a broad apex; lemmas 2.5–3.5 mm. long, acute or acuminate, scabrous on the keel, otherwise glabrous.

TYPE LOCALITY: "Africa, Asia, America."

DISTRIBUTION: Warm regions of both hemispheres.

ILLUSTRATIONS: Trin. Ic. pl. 69; Bull. U. S. Dep. Agr. Agrost. 7: f. 210; Bull. U. S. Dep. Agr. 772: f. 104; Britt. & Brown, Ill. Fl. f. 416; ed. 2. f. 553; Hitchc. Man. f. 1029.

144. *ELEUSINE* Gaertn. Fruct. 1: 7. 1788.

Annual grasses, with compressed culms and 1–several, densely flowered, digitate spikes, frequently with an additional spike a short distance below the others. Spikelets few to several-flowered, compressed, sessile in two rows on one side of the flattened rachis, the rachilla disarticulating above the glumes and between the florets; glumes unequal, acute, 1-nerved, shorter than the first lemma; lemmas broad 3-nerved, the nerves strong, approximate, awnless.

Type species, *Eleusine coracana* Gaertn.

1. *Eleusine indica* (L.) Gaertn. Fruct. 1: 8. 1788.

- Cynosurus indicus* L. Sp. Pl. 72. 1753.
Eleusine gracilis Salisb. Prodr. 19. 1796. (Based on *Cynosurus indicus* L.)
Cynodon indicus Rasp. Ann. Sci. Nat. 5: 303. 1825. (Based on *Eleusine indica* Lam. [error for Gaertn.]
Chloris repens Steud. Nom. Bot. ed. 2. 1: 353, as synonym of *Eleusine indica* Pers. 1840.
Eleusine scabra Fourn.; Hemsl. Biol. Centr. Am. Bot. 3: 565, name only. 1885; Mex. Pl. Gram. 2: 145. 1886. (Locality cited, Mexico.)
Eleusine indica var. *major* Fourn. Mex. Pl. Gram. 2: 145. 1886. (Locality cited, Mexico.)

Culms in tough spreading clumps, somewhat decumbent at the base, 15–70 cm. or rarely as much as 1 meter tall, compressed, very smooth; sheaths compressed, sharply keeled, sparsely papillose near the margins toward the summit, otherwise glabrous, the margins hyaline; ligule membranaceous, erose, about 1 mm. long; blades as much as 25 cm. long, 2–8 mm. wide, flat or conduplicate, the tip navicular, glabrous or sparsely pilose on the upper surface, the margins scabrous; spikes 2–several, 5–10 cm. long, stiffly ascending; spikelets 5 mm. long; lemmas 3 mm. long, broad at the base, rather abruptly narrowed to the subacute apex, sometimes mucronate.

TYPE LOCALITY: India.

DISTRIBUTION: Introduced; a common weed in the warm regions of both hemispheres.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 209; Bull. U. S. Dep. Agr. 772: f. 103; Britt. & Brown, Ill. Fl. f. 415; ed. 2. f. 552; Hitchc. Man. f. 1027.

145. CHLORIS Sw. Prodr. 25. 1788.

Eustachys Desv. Nouv. Bull. Soc. Philom. 2: 188. 1810. (Type species, *Chloris petraea* Sw.)
Schultesia Spreng. Pug. 2: 17. 1815. (Type species, *Chloris petraea* Sw.)
Agrostomia Cerv. Naturaleza 1: 345. 1870. (Type species, *A. mutica* Cerv.)

Annual or perennial, often stoloniferous grasses, with 2-several, digitate, verticillate, or subracemose spikes. Spikelets sessile in two rows on one side of the rachis, with one perfect floret, the rachilla articulate above the glumes, prolonged beyond the fertile floret, and bearing a narrow or clubshaped rudiment composed of one or more reduced sterile lemmas; glumes narrow, 1-nerved (rarely 3-nerved), the second a little longer than the first; fertile lemma 3-nerved, awnless (*C. submutica*) or awned from the back just below the usually acute tip, the callus more or less bearded on the sides, the keel glabrous or sparsely pilose, the margins usually ciliate, the hairs on the upper part often much longer than the rest.

Type species, *Agrostis cruciata* L.

Florets dark-brown.

Fertile lemma minutely ciliate or glabrous on the margins.

Spikelets 3 mm. long.

Spikes 1-3, usually 2.

Spikes 4-7; culms usually stouter.

Spikelets 2 mm. long.

Spikes 3-7.

Spikes 8-25.

Fertile lemma conspicuously long-ciliate on the margins; spikes flexuous.

Spikes 3-6; awn of fertile lemma about 1.3 mm. long.

Spikes 6-20, usually about 10; awn of fertile lemma 2-2.5 mm. long.

Florets green or pale, sometimes tinged with purple.

Rudiment broad, truncate, usually conspicuous. (See also *C. aristata*.)

Plants annual.

Fertile lemma 3-3.5 mm. long, the cilia as much as 4 mm. long; rudiment composed of one reduced floret.

Fertile lemma not more than 2.5 mm. long, the cilia 1-2 mm. long; rudiment composed of two reduced florets.

Plants perennial.

Spikelets awnless.

Spikelets awned.

Rudiment composed of two sterile florets, the first similar to the fertile floret, the second much reduced, club-shaped.

Rudiment composed of a single reduced sterile floret, distinctly different from the fertile one.

Spikes 3-6 cm. long (sometimes longer in *C. latisquamata*).

Rudiment conspicuous, inflated; spikes flexuous, usually ascending or somewhat spreading.

Rudiment inconspicuous, not inflated; spikes straight, stiffly ascending, spreading or reflexed.

Rudiment triangular, broader than long.

Rudiment oblong, longer than broad.

Spikes more than 6 cm. (usually 8-10 cm.) long.

Rudiment narrow, acute, usually inconspicuous. (See also *C. Gayana*.)

Spikelets 6-7 mm. long, spikes subracemose.

Awn of fertile lemma 7-15 mm. long; plants with large cleistogamous spikelets borne on slender branching underground stems.

Awn of fertile lemma about 6 mm. long; plants without underground spikelets.

Spikelets 4-5 mm. long; spikes digitate or subdigitate.

Spikes mostly 15-20 cm. long, widely spreading, naked for 2-4 cm. at the base.

Spikes 4-12 cm. long, ascending or sometimes somewhat spreading.

Awn of fertile lemma 10-12 mm. long.

Awn of fertile lemma 5-6 mm. long.

Spikelets not more than 3.5 mm. long.

Awn of fertile lemma 4-6 mm. long. Culms much exceeding the short basal blades.

Awn of fertile lemma more than 7 mm. long (sometimes only 5 mm. long in *C. radiata*).

Sheaths and blades densely short-pubescent.

Sheaths and blades glabrous or more or less pilose.

1. *C. floridana*.

2. *C. neglecta*.

3. *C. petraea*.

4. *C. glauca*.

5. *C. ciliata*.

6. *C. polydactyla*.

7. *C. virgata*.

8. *C. inflata*.

9. *C. submutica*.

10. *C. Gayana*.

11. *C. cucullata*.

12. *C. latisquamata*.

13. *C. subdolichostachya*.

14. *C. verticillata*.

15. *C. chloridea*.

16. *C. Brandegei*.

17. *C. texensis*.

18. *C. aristata*.

19. *C. mollis*.

20. *C. andropogonoides*.

21. *C. arenaria*.

- Spikes 1-3 cm. long, slender, the spikelets rather distant.
 Culms slender or filiform, densely tufted; second glume about 2 mm. long.
 Culms coarser; second glume 3 mm. long.
 Spikes 3-8 cm. long, the spikelets imbricate.
 Plants annual; blades flat, mostly 4-7 mm. wide.
 Plants perennial; blades flat or folded, not more than 3 mm. wide.
 Margins of the fertile lemma conspicuously ciliate in the upper part, the hairs as much as 1 mm. long.
 Margins of the fertile lemma evenly pilose throughout with short hairs, sometimes nearly glabrous.
22. *C. cruciata*.
 23. *C. Ekmanii*.
 24. *C. radiata*.
 25. *C. cubensis*.
 26. *C. Sagraeana*.

1. *Chloris floridana* (Chapm.) Wood, Bot. & Flor. ed. 1871.
 407. 1871.

Eustachys floridana Chapm. Fl. U. S. 557. 1860. (Type from middle Florida.)

Perennial; culms in small tufts, rather slender, 30-80 cm. tall, flattened; leaves mostly crowded toward the base in a fan-shaped cluster; sheaths compressed, keeled, the lower ones much longer than the internodes, the upper culm-sheaths elongate but shorter than the internodes, bladeless or the blade very much reduced; ligule 0.5 mm. long, minutely ciliate; blades subobtusate, conduplicate or flat toward the tip, 8-25 cm. (mostly 10-15 cm.) long, 4-6 mm. wide, glabrous, the margins scabrous; spikes 1-3 (usually 2), conjugate or digitate, erect or narrowly ascending, 3-12 cm. (mostly 6-10 cm.) long, densely pubescent at the base; spikelets 3 mm. long, spreading; glumes 1-nerved, scabrous, the first 2 mm. long, boat-shaped, acute, the second a little longer but narrower than the first, oblong, obtuse, minutely lobed, with a scabrous awn about 1 mm. long; fertile floret dark-brown, 2.8 mm. long, the callus shortly bearded, the lemma subacute, appressed-pilose nearly to the summit on the keel and margins, the awn about 0.5 mm. long, scabrous; rudiment oblong, obtuse, 1.5 mm. long, glabrous, or scabrous at the summit, mucronate.

TYPE LOCALITY: Florida.

DISTRIBUTION: Dry open ground or pine woods, Georgia and Florida.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 183; Hitchc. Man. f. 1063.

2. *Chloris neglecta* Nash, Bull. Torrey Club 22: 423. 1895.

Eustachys neglecta Nash, Bull. Torrey Club 25: 450. 1898.

Differing from *Chloris floridana* in having taller, stouter culms and 4-7 spikes.

TYPE LOCALITY: Orange Bend, Lake County, Florida (Nash 2149).

DISTRIBUTION: Dry sandy open ground or pine woods, Florida.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 181; Hitchc. Man. f. 1064.

3. *Chloris petraea* Sw. Prodr. 25. 1788.

?*Aira aegilopsoides* Walt. Fl. Car. 78. 1788. (Type from South Carolina.)

Agrostis complanata Ait. Hort. Kew. 1: 96. 1789. (Type grown in England, seed from Jamaica.)

Eustachys petraea Desv. Nouv. Bull. Soc. Philom. 2: 189. 1810. (Based on *Chloris petraea* Sw.)

Schullesia petraea Spreng. Pug. 2: 17. 1815. (Based on *Chloris petraea* Sw.)

Aira complanata Ait.; Steud. Nom. Bot. ed. 2. 1: 44, as synonym of *Chloris petraea* Sw. 1840.

Chloris Swartzii C. Müll. Bot. Zeit. 19: 341. 1861. (Based on *C. petraea* Sw.)

Chloris septentrionalis C. Müll. Bot. Zeit. 19: 340. 1861. (Type from Rio Brazos, Texas, Drummond.)

Chloris Swartziana Döll, in Mart. Fl. Bras. 2^o: 68. 1878. (Based on *C. petraea* Sw.)

Perennial; culms erect or sometimes decumbent at the base and rooting at the lower nodes, 30 cm. to more than a meter tall, conspicuously flattened; sheaths broad, flattened and keeled, crowded at the base in a fan-shaped cluster; ligule very short, minutely ciliate; blades conduplicate at the base, becoming flat toward the obtuse tip, 4-20 cm. (mostly about 10 cm.) long, 4-8 mm. wide, glabrous or densely pubescent on the upper surface at the very base; spikes 2-7 (usually 4-6), 3-12 cm. (mostly 6-8 cm.) long, digitate, narrowly ascending; spikelets 2 mm. long, horizontally spreading; glumes 1-nerved, scabrous on the keel, the first 1.2 mm.

long, acute, crescent-shaped, the second a little longer, broader, obtuse, notched, with an awn 0.5-1 mm. long; fertile floret dark-brown, 1.8 mm. long, the callus very short and rounded, the lemma obovate, blunt, pubescent on the keel, sparsely short-hispid on the upper half of the margins, the tip scabrous, the internerves smooth and shining, awnless; rudiment oblong-truncate, about 1 mm. long, 0.5 mm. wide, the tip scabrous.

TYPE LOCALITY: Jamaica (Swartz).

DISTRIBUTION: Open sandy ground, usually near the coast, Southeastern United States, eastern Mexico, and the West Indies, and southward to Trinidad and Panama.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12¹: pl. 23; Bull. U. S. Dep. Agr. Agrost. 7: f. 182; Hitchc. Man. f. 1061.

4. *Chloris glauca* (Chapm.) Wood, Bot. & Fl. ed. 1871. 407. 1871.

Eustachys glauca Chapm. Fl. S. U. S. 557. 1860. (Type from West Florida.)

Perennial; culms rather coarse, usually solitary, 70-135 cm. tall, commonly branching, conspicuously flattened; sheaths compressed, as much as 1 cm. wide from the keel to the margin, often elongate but usually shorter than the internodes; blades conduplicate or becoming flat toward the obtuse tip, 10-25 cm. long, 8-10 mm. wide, the margins scaberulous; ligule about 0.5 mm. long, minutely ciliate; spikes 8-25, 6-12 cm. long, digitate, narrowly ascending or somewhat spreading; spikelets 2 mm. long, spreading; glumes 1-nerved, scabrous, especially on the keel, the first 1-1.3 mm. long, crescent-shaped, the tip navicular, the second 1.8-2 mm. long, acute, or minutely toothed and mucronate; fertile floret about 2 mm. long, the lemma nearly glabrous on the keel and margins, sometimes mucronate.

TYPE LOCALITY: Florida.

DISTRIBUTION: Swamps, brackish marshes and wet places, North Carolina, Georgia, and Florida.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12¹: pl. 32; Bull. U. S. Dep. Agr. Agrost. 7: f. 180; Hitchc. Man. f. 1060.

5. *Chloris ciliata* Sw. Prodr. 25. 1788.

Cynodon ciliatus Rasp. Ann. Sci. Nat. 5: 303. 1825. (Based on *Chloris ciliata* Sw.)

Chloris propinqua Steud. Syn. Gram. 204. 1854. (Type from Guadeloupe, DuRoi.)

Chloris ciliata var. *texana* Vasey, Bull. U. S. Dep. Agr. Bot. 12¹: no. 30. 1890. (Type from Brownsville, Texas [Nealley].)

Chloris texana Nash, Bull. Torrey Club 25: 441. 1898. (Based on *C. ciliata* var. *texana* Vasey.)

Chloris Nashii A. Heller, Muhlenbergia 5: 120. 1909. (Based on *C. texana* Nash.)

Perennial; culms tufted, erect, sometimes geniculate at the nodes, 20-75 cm. (usually 30-40 cm.) tall, somewhat flattened, glabrous; sheaths rounded on the back, or flattened and keeled toward the summit, glabrous; ligule very short, sometimes minutely ciliate; blades flat, acuminate, 5-20 cm. long, or longer on the innovations, the uppermost reduced, 3-5 mm. wide, scabrous on the margins, otherwise glabrous; spikes 3-6, 4-8 cm. long, flexuous, digitate, narrowly ascending, silvery, tinged with brown; glumes 1-nerved, the first narrow, acute, 1.3 mm. long, the second broad with hyaline margins, subobtuse, 2 mm. long, mucronate; fertile floret 2-2.5 mm. long, the callus bearded, the lemma acute, conspicuously ciliate on the keel and margins nearly to the apex with long white hairs, the awn about 1 mm. long, scabrous; rudiment club-shaped, composed of two reduced florets, the first about 1.2 mm. long, glabrous, the summit and margins hyaline, the awn 1 mm. long, the second much smaller, awnless.

TYPE LOCALITY: Jamaica (Swartz).

DISTRIBUTION: Open ground and waste places, southern Texas and the West Indies, and southward to Argentina, infrequent in Central America and South America.

ILLUSTRATIONS: Trin. Ic. pl. 307; Bull. U. S. Dep. Agr. 12¹: pl. 30; Hitchc. Man. f. 1073.

6. *Chloris polydactyla* (L.) Sw. Prodr. 26. 1788.

Andropogon barbatus L. Syst. Nat. ed. 10. 2: 1305. 1759.

Andropogon polydactylon L. Sp. Pl. ed. 2, 1483. 1763. (Based on *A. barbatus* L. (1759), description copied.)

Saccharum polydactylon Thunb. Fl. Jap. 42. 1784. (Based on *Andropogon polydactylon* L.)

Chloris barbata Nash, Bull. Torrey Club 25: 443. 1898. (Based on *Andropogon barbatus* L.) Not *Chloris barbata* Sw. 1797.

Perennial; culms erect, often in large clumps, 50 cm. to more than 1 meter tall; sheaths rounded on the back or only obscurely keeled, glabrous; ligule very short, minutely ciliate or

ciliate; blades flat, acuminate, as much as 40 cm. long, 4–10 mm. wide, bearing at the base on the upper surface a conspicuous line of long hairs, the margins scabrous, otherwise glabrous; spikes 6–20 (usually about 10), 6–15 cm. (usually 10–12 cm.) long, digitate, very flexuous, spreading, silvery, tinged with brown; spikelets 2.5–3 mm. long; glumes acuminate, 1-nerved, scabrous on the keel, the first 1.8 mm. long, broader than the second, the second narrow, 2.5–3 mm. long, crescent-shaped; fertile floret 2 mm. long, obovate, the callus minutely bearded, the lemma acute, appressed-pilose on the keel, prominently ciliate on the margins with hairs as much as 2 mm. long, the awn 2–2.5 mm. long, scabrous; rudiment about 1.2 mm. long, composed of two spreading reduced sterile lemmas, the first with an awn 2 mm. long, the second much smaller, awnless.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Open ground and waste places, Florida and the West Indies; southward to Argentina.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 187; Hitchc. Man. f. 1072.

7. *Chloris virgata* Sw. Fl. Ind. Occ. 203. 1797.

Chloris pubescens Lag. Var. Ci. 4: 143. 1805. (Type from Peru.)

Rabdochloa virgata Beauv. Agrost. 84, 158, 176. 1812. (Presumably based on *Chloris virgata* Sw.)

Chloris compressa DC. Cat. Pl. Hort. Monsp. 94. 1813. (Type cultivated at Montpellier.)

Chloris elegans H.B.K. Nov. Gen. & Sp. 1: 166. 1816. (Type from Mexico, *Humboldt & Bonpland*.)

Chloris alba Presl, Rel. Haenk. 1: 289. 1830. (Type from Mexico, *Haenke*.)

Chloris penicillata Willd.; Steud. Nom. Bot. ed. 2. 1: 353, as synonym of *C. elegans* H.B.K. 1840.

Chloris alba var. *aristulata* Torr. Pacific R. R. Rep. 4: 155. 1857. (Localities cited, banks of the upper Rio Grande [Emory Exped.]; Texas, *Drummond* 395.)

Agrostia barbata Cerv. Naturaleza 1: 346. 1870. (Type from Cuernavaca, Mexico.)

Annual; culms erect, or usually decumbent at the base, sometimes rooting at the lower nodes, 10 cm. to more than a meter tall; sheaths compressed-keeled, glabrous, mostly longer than the internodes; ligule very short, minutely ciliate; blades flat, 4–25 cm. long, 3–7 mm. wide, scaberulous or nearly smooth on both surfaces, sometimes more or less papillose-pilose on the upper surface near the base, the margins scabrous; spikes 3–15 (usually about 6), 3–9 cm. (usually 5–6 cm.) long, erect or narrowly ascending, flexuous, crowded in a rather dense silvery head; spikelets 3–3.5 mm. long; glumes acuminate, 1-nerved, scabrous on the keel, the first 1.5–2.5 mm. long, the second 2.5–3 mm. long, with an awn about 1 mm. long; fertile floret 3–3.5 mm. long, the callus bearded, the lemma acute, the keel bowed out at the middle, short-ciliate on the margins on the lower part, long-ciliate on the upper third, the hairs as much as 4 mm. long, the awn rather stout, 6–10 mm. long, scabrous; rudiment 2–2.5 mm. long, about 0.7 mm. wide, subacute, the awn 5–7 mm. long.

TYPE LOCALITY: Antigua (*Swartz*).

DISTRIBUTION: A weed in fields and waste places, central and southwestern United States, Mexico, and the West Indies; also in South America and the Old World.

ILLUSTRATIONS: H.B.K. Nov. Gen. & Sp. 1: pl. 49; Bull. U. S. Dep. Agr. Bot. 12: pl. 29; Bull. U. S. Dep. Agr. Agrost. 7: f. 186; Hitchc. Man. f. 1070; Misc. Publ. U. S. Dep. Agr. 243: f. 84.

8. *Chloris inflata* Link, Enum. Pl. 1: 105. 1821.

Andropogon barbatum L. Mant. 302. 1771. (Type from the East Indies.) Not *A. barbatum* L. 1759.

Chloris barbata Sw. Fl. Ind. Occ. 200. 1797. (Based on *Andropogon barbatum* L., 1771.)

Chloris paraguayensis Steud. Syn. Gram. 204. 1854. (Type from Paraguay.)

Annual, culms erect, or decumbent at the base and rooting at the lower nodes, 15–85 cm. tall; sheaths compressed-keeled, glabrous, the margins hyaline; ligule 0.3 mm. long, minutely ciliate; blades flat, 5–10 cm. long (rarely to 25 cm. long), 2–3 mm. wide, glabrous, or sparsely hispid near the base, the margins scabrous; spikes 7–10, 3–8 cm. long, digitate, more or less flexuous, erect or nearly so, forming a rather dense purplish head; spikelets 2.3–2.5 mm. long; glumes 1-nerved, purple, with hyaline margins, sparsely scabrous on the keel, the first acuminate, 1.5–1.7 mm. long, the second abruptly acute, submucronate, 2.2–2.3 mm. long; fertile floret 2.4 mm. long, the callus prominently bearded, the lemma subobtusely, pilose on both sides of the midnerve, the margins conspicuously ciliate on the upper half, the hairs 1–2 mm. long,

the awn 6-8 mm. long; rudiment composed of two reduced, club-shaped, spreading florets, 1-1.5 mm. long, the awns mostly 6-8 mm. long.

TYPE LOCALITY: "California"; grown from seed in the Berlin Botanic Garden, probably from Mexico.

DISTRIBUTION: Waste places, Mexico and the West Indies, and southward to Argentina.

ILLUSTRATIONS: Trin. Ic. *pl.* 306; Misc. Publ. U. S. Dep. Agr. 243: *f.* 83.

9. *Chloris submutica* H.B.K. Nov. Gen. & Sp. 1: 167. 1816.

Chloris polystachya Lag. Gen. & Sp. Nov. 4. 1816. (Type from Mexico.)

Chloris inermis Trin. Gram. Unifl. 232. 1824. (Based on *Chloris polystachya* Lag.)

Eustachys polystachya Kunth, Rév. Gram. 1: 88. 1829. (Based on *Chloris polystachya* Lag.)

Chloris subbiflora Steud. Syn. Gram. 206. 1854.

Agrostoma mutica Cerv. Naturaleza 1: 345. 1870. (Type from Mexico.)

Perennial, sparingly stoloniferous; culms 30-65 cm. tall, erect or decumbent at the base and rooting at the lower nodes, occasionally branching below; sheaths compressed-keeled, scabrous, the lower ones overlapping, the upper ones shorter than the internodes, more or less hispid at the throat; ligule 0.5 mm. long, membranaceous, minutely ciliate; spikes 5-14 (usually 8-10), 3-8 cm. long, more or less arranged in whorls on a short axis, spreading or reflexed, the rachis densely pubescent at the base; spikelets 3-3.5 mm. long, crowded; glumes acute, 1-nerved, scabrous on the keel, the first 1.3-2 mm. long, the second 2.3-3 mm. long, broader than the first; fertile floret 3-3.4 mm. long, the callus bearded, the lemma obtuse, the margins shortly pilose toward the tip, awnless or mucronate; rudiment about 2 mm. long, 0.5 mm. wide, truncate, awnless.

TYPE LOCALITY: Laguna de Tezcoco, Mexico (*Humboldt & Bonpland*).

DISTRIBUTION: Open ground and waste places, central Mexico.

ILLUSTRATIONS: H.B.K. Nov. Gen. & Sp. 1: *pl.* 50.

10. *Chloris Gayana* Kunth, Rév. Gram. 1: 89, name only. 1829; 293. 1830.

Perennial; culms densely tufted, commonly 1-1.5 meters tall, compressed, frequently with strong arching stolons; sheaths glabrous or scaberulous, the lower ones compressed-keeled, the upper rounded on the back, sometimes with a tuft of long hairs at the mouth; ligule membranaceous, very short, ciliate with long hairs; blades flat, usually elongate, tapering to a fine point, 3-7 mm. wide, scabrous, especially on the margins; spikes 6-20, 5-12 cm. long, narrowly ascending in a rather dense head; spikelets 4.5 mm. long; glumes acute, 1-nerved, or the second sometimes 3-nerved, scabrous on the keel, the first 1.5 mm. long, the second 2.5 mm. long, mucronate; fertile floret 3.5 mm. long, the callus bearded, the lemma acute, short-ciliate on the margins, the hairs longer on the upper third, the awn 4-6 mm. long, scabrous; rudiment composed of two reduced florets, the first similar to the fertile floret, 2.5 mm. long, glabrous, the awn 2-4 mm. long, the second small, club-shaped, awnless.

TYPE LOCALITY: Senegal, Africa.

DISTRIBUTION: Tropical America, escaped from cultivation; introduced from Africa.

ILLUSTRATION: Hitchc. Man. *f.* 1065.

11. *Chloris cucullata* Bisch. Ann. Sci. Nat. Bot. III. 19: 357. 1853.

Perennial; culms 15 (rarely 10 cm.)-65 cm. tall, usually erect, sometimes decumbent at the base and rooting at the lowermost nodes; sheaths compressed-keeled, glabrous or scaberulous, the hyaline margins often conspicuous; ligule 0.5 mm. long, very minutely ciliate; blades flat, conduplicate at the base, 5-25 cm. long (mostly 8-15 cm.), 1.5-3 mm. wide, scabrous on both surfaces or the lower glabrous except on the midnerve, the margins very scabrous; spikes 6-15, 3-5 cm. long, usually flexuous, ascending, spreading or some of them even reflexed, arranged in two or three approximate whorls, the rachis scabrous, densely pubescent at the base; spikelets 1.5-2 mm. long; glumes broad, 1-nerved, scabrous on the keel, the first sub-obtuse, 0.8-1 mm. long, the second acute, 1.3-1.5 mm. long, sometimes mucronate; fertile floret 1.5-1.8 mm. long, obovate, the lemma shortly pilose on the keel and margins, mucronate

or usually with an awn 1-2 mm. long; rudiment conspicuous, inflated, much broader than long, mucronate or with an awn 1-2 mm. long.

TYPE LOCALITY: Matamoros, Tamaulipas.

DISTRIBUTION: Open sandy plains and waste places, Texas, New Mexico, and northeastern Mexico (type only).

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12: *pl. 31*; Bull. U. S. Dep. Agr. Agrost. 7: *f. 184*; Hitchc. Man. *f. 1078*.

12. *Chloris latisquamea* Nash, Bull. Torrey Club 25: 439. 1898.

Chloris verticillata var. *intermedia* Vasey, in Coult. Contr. U. S. Nat. Herb. 2: 528. 1894. (Type from Houston, Texas, Hall 773.)

Perennial; culms cespitose, erect, 25-70 cm. tall, somewhat flattened; sheaths overlapping, compressed-keeled, scabrous on the keel, otherwise glabrous, the margins hyaline; ligule membranaceous, 1 mm. long, minutely ciliate; blades flat, or conduplicate near the base, as much as 25 cm. long, 2-3 mm. wide, scabrous, especially on the lower side of the midnerve and on the margins; spikes 6-12, 4-8 cm. long, subdigitate, ascending or spreading; spikelets 2-2.5 mm. long; glumes lanceolate, acute, hyaline, 1-nerved, scabrous on the keels, the first about 1 mm. long, the second 2 mm. long; fertile floret 2-2.4 mm. long, the callus short-bearded, the lemma acute, ciliate on the keel and margins, the awn 2.5-4.5 mm. long, scabrous; rudiment triangular, 1-1.5 mm. long, as broad as long, the awn 1-3 mm. long, scabrous.

TYPE LOCALITY: Kerrville, Texas (Heller 1767).

DISTRIBUTION: Texas and northeastern Mexico.

ILLUSTRATION: Hitchc. Man. *f. 1077*.

13. *Chloris subdolichostachya* C. Müll. Bot. Zeit. 19: 341. 1861.

Chloris verticillata var. *aristulata* Torr. & Gray, Pacific R. R. Rep. 2: 176. 1855. (Type from Lower Rio Grande, Gregg.)

Chloris brevispica Nash, Bull. Torrey Club 25: 438. 1898. (Type from Nueces County, Texas, Heller 1471.)

Perennial; culms erect or sometimes decumbent at the base, 8-20 cm. tall; sheaths overlapping, compressed-keeled, glabrous; ligule 0.5-1 mm. long, minutely ciliate; blades flat or conduplicate, 2-10 cm. (usually less than 5 cm.) long, 1.5-2.5 mm. wide, the margins and under side of the midnerve scabrous, otherwise glabrous or nearly so; spikes 6-10, 3-5 cm. long, ascending, spreading, or sometimes even reflexed, strictly digitate, densely pubescent at the very base; spikelets 2.5 mm. long; glumes acute, 1-nerved, scabrous on the keel, the first 1.2 mm. long, the second 2 mm. long; fertile floret 2.5 mm. long, the lemma acute, minutely pilose on the keel and margins, the awn 1-3 mm. long (usually about 2 mm.), scabrous; rudiment subobtusely, bowed out at the middle, 1.5 mm. long, the awn 1-2 mm. long, scabrous.

TYPE LOCALITY: Texas (Drummond 372).

DISTRIBUTION: Prairies and dry open ground, southern Texas.

ILLUSTRATION: Hitchc. Man. *f. 1076*.

14. *Chloris verticillata* Nutt. Trans. Am. Phil. Soc. II.

5: 150. 1837.

Perennial; culms usually erect, or sometimes decumbent at the base and rooting at the lower nodes, 15-45 cm. tall; sheaths compressed-keeled, glabrous, the margins hyaline; ligule 0.5 mm. long, minutely ciliate; blades flat, conduplicate at the base, glabrous or scabrous on both surfaces, the margins very scabrous; spikes 8-20 (usually 10-15), 5-14 cm. (usually 8-10 cm.) long, digitate or whorled, stiffly spreading, naked at the densely pubescent base; spikelets 2.5-3 mm. long, rather distant; fertile floret 2.5 mm. long, the lemma acute, minutely pilose on the keel and margins, the awn slender, about 5 mm. long; rudiment 1.5 mm. long, truncate, the awn 4-5 mm. long.

TYPE LOCALITY: Arkansas (Nuttall).

DISTRIBUTION: Plains, Missouri to Colorado, and southward to Louisiana and New Mexico.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12: *pl. 33*; Bull. U. S. Dep. Agr. Agrost. 7: *f. 185*; Britt. & Brown, Ill. Fl. *f. 407*; ed. 2. *f. 544*; Hitchc. Man. *f. 1074*.

15. *Chloris chloridea* (Presl) Hitchc. Proc. Biol. Soc. Wash.

41: 162. 1928.

Dineba chloridea Presl, Rel. Haenk. 1: 291. 1830. (Type from Mexico, *Haenke*.)*Eutriana chloridea* Kunth, Rév. Gram. Suppl. XXIII. 1830. (Based on *Dineba chloridea* Presl.)*Gymnopogon longifolius* Fourn. Mex. Pl. Gram. 2: 144. 1886. (Type from Vera Cruz, Mexico, *Gouin* 52.)*Gymnopogon Virletii* Fourn. Mex. Pl. Gram. 2: 144. 1886. (Type from San Luis Potosí, Mexico, *Virlet* 1441.)*Chloris longifolia* Vasey, Contr. U. S. Nat. Herb. 1: 284. 1893. (Based on *Gymnopogon longifolius* Fourn.) Not *C. longifolia* Steud., 1854.*Chloris clandestina* Scribn. & Merr. Bull. U. S. Dep. Agr. Agrost. 24: 25. 1901. (Based on *Gymnopogon longifolius* Fourn.)

Perennial; culms tufted, erect, 50–110 cm. tall, bearing cleistogamous spikelets on the slender branches of underground stems; sheaths longer than the internodes, glabrous, keeled, the keel sometimes obscure; ligule very short, ciliate; blades flat, attenuate-pointed, narrowed toward the base, as much as 30 cm. long, 5–9 mm. wide, glabrous on both surfaces, the margins scabrous; spikes 5–13 (usually less than 10), 8–18 cm. (usually about 12 cm.) long, stiffly ascending or spreading, approximate or relatively distant on the axis; spikelets 6–7 mm. long, appressed; glumes acute, 1-nerved, the first 1–1.5 mm. long, the second broader, 2–3.5 mm. long; fertile floret 6–7 mm. long, the lemma acuminate, the callus bearded, more or less hispid on the margins in the upper half, otherwise glabrous, the awn 7–15 mm. long, very scabrous; rudiment very narrow, about 2 mm. long, the awn 4–8 mm. long, scabrous; cleistogamous spikelets solitary, 6–7 mm. long, terminating the slender branchlets.

TYPE LOCALITY: Mexico (*Haenke*).

DISTRIBUTION: Open ground and waste places, Texas (Brownsville) and Mexico.

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 1: *pl.* 19; Hitchc. Man. *f.* 1067.16. *Chloris Brandegei* (Vasey) Swallen, Am. Jour. Bot.

22: 41. 1935.

Diplachne Brandegei Vasey, Proc. Calif. Acad. II. 2: 213. 1889.*Leptochloa Brandegei* Vasey; Hitchc. Bull. U. S. Dep. Agr. Pl. Ind. 33: 21. 1903. (Based on *Diplachne Brandegei* Vasey.)*Gouinia Brandegei* Hitchc. Bull. U. S. Dep. Agr. Pl. Ind. 33: 21. 1903. (Based on *Diplachne Brandegei* Vasey.)

Perennial; culms tufted, erect, 80–105 cm. tall; sheaths compressed-keeled, the lower ones elongate, loosely pilose with long hairs, felty pubescent at the base, the upper ones usually shorter than the internodes, glabrous on the back, the margins more or less appressed-pilose, with a densely pubescent line on the collar; blades flat, or more or less folded on the innovations, as much as 40 cm. long, 4–7 mm. wide, or narrower on the innovations, finely pubescent or pilose on both surfaces with a dense line of long hairs just above the ligule; ligule 0.5 mm. long, minutely erose or ciliate; spikes 5–15, 8–15 cm. long, widely spreading or reflexed, approximate or in small, rather distant fascicles, densely pilose at the very base and in the axils; spikelets relatively distant, about 6 mm. long, appressed; glumes 1-nerved, the first narrow, acute, 1.5 mm. long, the second broader, acuminate, 4 mm. long; fertile floret 6 mm. long, the callus rather densely bearded on the sides, the back glabrous, the lemma sparsely hispid on the margins, the awn about 6 mm. long, scabrous; rudiment very narrow, 2 mm. long, nearly enclosed by the margins of the fertile lemma, the margins hispid at the tip, the awn about 2 mm. long, very scabrous.

TYPE LOCALITY: Magdalena Island, Baja California (*Brandegee* 11).

DISTRIBUTION: Baja California.

17. *Chloris texensis* Nash, Bull. Torrey Club 23: 151. 1896.*Chloris Nealleyi* Nash, Bull. Torrey Club 25: 435. 1898. (Based on *C. texensis* Nash.)

Perennial; culms tufted, erect or nearly so, 40–70 cm. tall; sheaths broad, conspicuously flattened and keeled, glabrous or sometimes scabrous, more so on the keel, the hyaline margins rather narrow; blades folded or flat toward the ends, 10–20 cm. long, 3–7 mm. wide when

unfolded, very scabrous on the margins, otherwise glabrous or only slightly scabrous; spikes 6-8, mostly 15-20 cm. long, stiffly and widely spreading, naked at the base for 2-4 cm., densely pilose in the axils and on the lower part of the rachis; spikelets 4-4.5 mm. long, appressed, not crowded; fertile floret 4 mm. long, the callus shortly bearded, the lemma acute, sparsely pilose on the margins on the upper third, sometimes only scabrous, the awn about 10 mm. long, scabrous; rudiment narrow, acute, 2 mm. long, the awn about 5 mm. long.

TYPE LOCALITY: Texas (*Nealley*).

DISTRIBUTION: Sandy plains, Texas; rare.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 188; Hitchc. Man. f. 1069.

18. *Chloris aristata* (Cerv.) Swallen, comb. nov.

Agrostomia aristata Cerv. *Naturaleza* 1: 345. 1870.

Stoloniferous perennial; culms erect or decumbent at the base, 15-75 cm. tall, compressed, sometimes branching at the lower nodes; sheaths compressed-keeled, glabrous, or papillose-pilose near the summit, the margins hyaline; ligule membranaceous, 0.5 mm. long, minutely ciliate, blades flat from a conduplicate base, 4-20 cm. long, sometimes longer on the innovations, 2-4 mm. wide, scabrous, with a few long hairs on the upper surface near the base; spikes 4-9, 4-10 cm. long, digitate, or sometimes with a single spike a short distance below the others, ascending or somewhat spreading; spikelets 4 mm. long, appressed or somewhat spreading; glumes acuminate, 1-nerved, scabrous on the keel, the first 2.5 mm., the second 4 mm. long; fertile floret 3.6-4 mm. long, the callus bearded, the lemma acute, appressed-ciliate on the margins nearly to the summit, the hairs somewhat longer above, the awn about 0.8 mm. from the tip, 10-12 mm. long, scabrous; rudiment narrowly triangular, truncate, 1.2-2 mm. long, the awn 4-8 mm. long, scabrous.

TYPE LOCALITY: "San Angel, San Agustin de las Cuevas," Mexico.

DISTRIBUTION: Open ground, fields, and waste places, central Mexico to Costa Rica.

NOTE: This species has been confused with *C. orthonoton* Doell of Brazil.

19. *Chloris mollis* (Nees) Swallen, comb. nov.

Gymnopogon mollis Nees, *Agrost. Bras.* 427. 1829.

Gymnopogon rupestre Ridley, *Jour. Linn. Soc.* 27: 73. 1890. (Type from Fernando Noronha, Brazil.)

Chloris anisopoda B. L. Robinson, *Proc. Am. Acad.* 38: 118. 1902. (Type from Charles Island, Galapagos Islands, *Baur* 333.)

Chloris angustiflora F. Aesch. Freg. *Eugenies Resa Bot.* 118. 1910; *Repert. Sp. Nov.* 10: 300. 1912. (Type from Ecuador, *Andersson*.)

Chloris leptanthe Hitchc. in *Urban, Symb. Ant.* 7: 166. 1912. (Type from Bonaire, Venezuela, *Suringar*.)

Chloris Luetselburgii Hitchc. *Proc. Biol. Soc. Wash.* 36: 197. 1923. (Type from Parahyba, Brazil, *Lützelburg* 12451.)

Chloris rupestris Hitchc. *Misc. Publ. U. S. Dep. Agr.* 243: 126. 1936. (Based on *Gymnopogon rupestris* Ridley.)

Annual; culms tufted, erect, or geniculate at the lower nodes, 20 cm. to more than a meter tall; sheaths rounded on the back or keeled only near the summit, glabrous or sparsely pubescent, the margins finely papillose-ciliate; ligule 0.5 mm. long, minutely ciliate; blades flat, acuminate, scabrous, 5-15 cm. long, 1-6 mm. wide; spikes 5-15 (rarely fewer), 5-12 cm. long, slender, somewhat flexuous, ascending or appressed, aggregate on an axis as much as 5 cm. long; spikelets very narrow; glumes acuminate, awn-pointed, 1-nerved, scabrous on the keel, the first 3-4 mm. long, the second 4-5 mm. long; fertile floret 4-5 mm. long, the callus bearded on the sides, the lemma shortly ciliate on the margins toward the summit, the awn 5-6 mm. long, scabrous; rudiment very narrow, about 2 mm. long, the callus bearded, the margins ciliate near the tip, the awn about 4 mm. long, scabrous.

TYPE LOCALITY: Piahy, Brazil (*Martius*).

DISTRIBUTION: Dry, open or brushy ground, fields and waste places, West Indies, and southward in South America to Ecuador and Brazil.

20. *Chloris andropogonoides* Fourn. Mex. Pl. Gram. 2: 143. 1886.

Chloris tenuispica Nash, Bull. Torrey Club 25: 436. 1898. (Type from Texas, *Nealley* in 1889.)

Stoloniferous perennial; culms slender, erect, 10–25 cm. tall, much exceeding the short leaves; sheaths crowded, compressed-keeled, glabrous or nearly so, the margins hyaline; ligule 0.5 mm. long, minutely ciliate; blades flat from a conduplicate base, 2–6 cm. long, 1.5–2 mm. wide, scaberulous, sometimes sparsely papillose-hispid, the margins scabrous; spikes 6–10, 3–8 cm. long, ascending or spreading, digitate or with a second whorl below; spikelets 2–3 mm. long, appressed; glumes acuminate, 1-nerved, scabrous on the keel, the first slightly shorter, the second slightly longer than the fertile floret; fertile floret 2–2.3 mm. long, acute, the lemma appressed-pilose on the keel and margins, the awn 4–6 mm. long, scabrous; rudiment narrow, 1.5 mm. long, the awn about 2 mm. long.

TYPE LOCALITY: San Luis de Potosí, Mexico (*Viret 1462*).

DISTRIBUTION: Open ground, Texas and northeastern Mexico.

ILLUSTRATION: Hitchc. Man. f. 1068.

21. *Chloris arenaria* Hitchc. & Ekman, Misc. Publ. U. S. Dep. Agr. 243: 131. 1936.

Chloris eleusinoides var. *vestita* Greenman, Trans. Acad. St. Louis 7: 477. 1897. (Type from Cienfuegos, Province of Santa Clara, Cuba, *Combs 631*.)

Perennial; culms in small tufts, slender, erect or somewhat geniculate at the base, 30–50 cm. tall; leaves mostly crowded at the base; sheaths compressed-keeled, puberulent; blades flat or usually folded, 0.5–10 cm. long, 1.5–3 mm. wide, pubescent; ligule 0.5 mm. long, minutely ciliate; spikes 4–6, 3–6 cm. long, digitate, spreading or reflexed, pubescent at the base; glumes 1-nerved, acuminate, glabrous, the first 3 mm. long, the second 5 mm. long; fertile floret 3.5 mm. long, the slender callus pilose, the lemma appressed-pilose on the margins, the awn slender, 1–2.5 cm. long; rudiment narrowly oblong, 2 mm. long, sparsely pilose on the margins above, the awn a little shorter than that of the fertile lemma.

TYPE LOCALITY: La Grifa, Pinar del Rio, Cuba (*Ekman 11253*).

DISTRIBUTION: Sandy pinelands, Cuba.

22. *Chloris cruciata* (L.) Sw. Prodr. 25. 1788.

Agrostis cruciata L. Syst. Nat. ed. 10. 2: 873. 1759.

Rabdochloa cruciata Beauv. Agrost. 84, 158, 176. 1812. (Based on *Agrostis cruciata* L.)

Chloris Humboldtiana Steud. Syn. Gram. 205. 1854. (Type from Cuba.)

Chloris brevigluma Wright, Anal. Acad. Ci. Habana 8: 200. 1871. (Type from Cuba, *Wright 1848*.)

Perennial; culms densely tufted, filiform, erect, or geniculate at the base, sometimes decumbent-spreading, branching at the lower nodes, 7–30 cm. tall; sheaths compressed-keeled, glabrous; blades slender, involute, soft, mostly 2–5 cm. long, the uppermost much reduced, glabrous; spikes 2–4, 1–3 cm. long, very slender, spreading or reflexed; spikelets rather distant, spreading, distinctly pedicellate; glumes acute, 1-nerved, the first broader than the second, 1 mm. long, the second about 1.5–2 mm. long; fertile floret 2–2.5 mm. long, the lemma glabrous or with a few hairs on the margins near the summit, the awn slender, mostly 8–10 mm. long, scaberulous; rudiment 1 mm. long, narrow, obtuse, the awn about 6 mm. long, scaberulous.

TYPE LOCALITY: Jamaica (*Sloane*).

DISTRIBUTION: Roadsides and rocky hills, Cuba, Jamaica, and Haiti.

23. *Chloris Ekmanii* Hitchc. Misc. Publ. U. S. Dep. Agr. 243: 129. 1936.

Perennial; culms slender, densely tufted, erect or geniculate at the base, 10–50 cm. tall (usually 20–30 cm.); sheaths compressed-keeled, glabrous, or more or less pilose at the throat; blades slender, involute or sometimes flat, less than 10 cm. long, the culm-blades very much reduced, 1–2 (rarely 3) mm. wide, glabrous or nearly so; spikes 2–5, 1.5–3 cm. long, spreading or reflexed; spikelets rather distant, appressed; glumes very narrow, acuminate, 1-nerved, the

first about 1.5 mm. long, the second about 3 mm. long; fertile floret 3 mm. long, the lemma narrow, glabrous on the back, the margins sparsely pilose near the summit, the awn 7-8 mm. long, scaberulous; rudiment 1 mm. long, almost enclosed by the fertile lemma, the awn 5-6 mm. long, scaberulous.

TYPE LOCALITY: Babujal, Jagüey Grande, Matanzas, Cuba (*Ekman 16954*).

DISTRIBUTION: Grassy or rocky slopes and in pine woods, Cuba, Jamaica, and Hispaniola.

24. *Chloris radiata* (L.) Sw. Prodr. 26. 1788.

Agrostis radiata L. Syst. Nat. ed. 10. 2: 873. 1759.

Cynosurus scoparius Lam. Encyc. 2: 188. 1786. (Type from "St. Domingue.")

Chloris gracilis P. Durand, Chlor. Sp. 10. 1808. (Type from Jamaica.)

Chloris Durandiana Schultes; in R. & S. Syst. Veg. Mant. 2: 341. 1824. (Based on *Chloris gracilis* Durand.)

Chloris glaucescens Steud. Syn. Gram. 206. 1854. (Type from Guadeloupe.)

Gymnopogon radiata L. Parodi, Physis 4: 180. 1918. (Based on *Agrostis radiata* L.)

Annual; culms erect or decumbent at the base, branching, 15-60 cm. tall, distinctly flattened; sheaths compressed-keeled, longer than the internodes, glabrous; blades thin, flat, mostly 4-10 cm. long, or the lower ones sometimes longer, smooth or scabrous, sometimes sparsely pilose; ligule 0.5 mm. long, minutely ciliate; spikes 5-15 (mostly more than 10), 4-8 cm. long, slender, straight or flexuous, subdigitate or in two or three approximate fascicles, ascending or spreading; spikelets appressed; glumes acuminate, 1-nerved, the first 1-2 mm. long, the second 2-3 mm. long, glabrous, or scabrous on the keel; fertile floret about 2.5-3 mm. long, narrow, the callus bearded, the lemma glabrous on the back, short-ciliate on the upper part of the margins, the awn 5-10 mm. long, scaberulous; rudiment very slender, 1 mm. long, glabrous, the awn 4-6 mm. long, scaberulous.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Roadsides, grassy plains, and waste places, Mexico and the West Indies; southward in South America to Paraguay.

ILLUSTRATION: Misc. Publ. U. S. Dep. Agr. 243: f. 80.

25. *Chloris cubensis* Hitchc. & Ekman, Misc. Publ. U. S. Dep. Agr. 243: 131. 1936.

Perennial; culms slender, branching, erect or spreading, geniculate and often decumbent at the base, sometimes forming stolons, 50-75 cm. tall; sheaths compressed-keeled, glabrous, sometimes villous at the throat; ligule about 0.3 mm. long, minutely ciliate; blades flat or folded, 5-10 cm. long, 1-2 mm. wide, the upper culm-blades reduced, scaberulous and sometimes sparsely villous on the upper surface, glabrous on the lower, the margins scabrous; spikes 5-7, digitate, 4-7 cm. long, ascending; spikelets ascending or appressed, about 3 mm. long; glumes narrow, acuminate, 1-nerved, scabrous on the keel, the first 2 mm. long, the second 3 mm. long; fertile floret 3 mm. long, the callus pilose, the lemma acute, appressed-pilose on the upper half of the margins, the hairs as much as 1 mm. long, the keel glabrous or sparsely pilose, the awn 1-2 cm. long, slender, flexuous, scabrous; rudiment 1.5 mm. long, narrowly oblong, truncate, the awn 5-10 mm. long, scabrous.

TYPE LOCALITY: Gamboa, Oriente, Cuba (*Ekman 14960*).

DISTRIBUTION: Along roads and in dry open ground, Cuba, Jamaica, Haiti, and Leeward Islands.

26. *Chloris Sagraeana* A. Rich. in Sagra, Hist. Cuba 11: 315. 1850.

Chloris eleusinoides Griseb. Fl. Brit. W. Ind. 539. 1864. (Type from Jamaica.)

Chloris Morales-Coelloi Léon, Bull. Torrey Club 53: 458. 1926. (Type from Oriente, Léon 12320.)

Perennial; culms caespitose, erect or decumbent at the base, 15-65 cm. tall; sheaths compressed-keeled, glabrous; ligule very short, minutely ciliate; blades flat or folded, mostly 5-15 cm. long, 2-3 mm. wide, glabrous; spikes 3-6, rarely as many as 9, 3-7 cm. long, digitate or sometimes verticillate, ascending or spreading, sometimes reflexed at maturity, densely pubescent at the base; spikelets imbricate, appressed; glumes narrow, acuminate, the first

2 mm. long, the second 3 mm. long; fertile floret about 3 mm. long, narrow, the callus minutely pilose, the lemma minutely pilose on the margins or sometimes nearly glabrous; the awn about 1 cm. long, flexuous, scabrous; rudiment narrow, usually nearly enclosed by the margins of the fertile lemma, the awn about 5 mm. long.

TYPE LOCALITY: Cuba (*Ramon de la Sagra*).

DISTRIBUTION: Dry or rocky soil, West Indies.

146. *TRICHLORIS* Fourn. Mex. Pl. Gram. 2: 142. 1886.

Chloropsis Hack. in E. & P. Nat. Pl. 2: 59, as synonym of *Trichloris*. 1887;—Hack.; Kuntze, Rev. Gen. 771. 1891. (Type species, *Trichloris Blanchardiana* Fourn.)

Leafy tufted perennial grasses with several narrowly ascending spikes crowded on a short axis. Spikelets 2–5-flowered, the uppermost reduced, subsessile on one side of a very narrow rachis; glumes acuminate, 1-nerved, persistent, the second longer and a little broader than the first; lemma rounded on the back, 3-nerved, the nerves obscure, 3-awned, the lateral awns sometimes short or obsolete; palea comparatively broad, slightly exceeding the body of the lemma.

Type species, *Trichloris pluriflora* Fourn.

Spikelets 2-flowered, both lemmas with 3 long awns.

1. *T. mendocina*.

Spikelets 3–5-flowered, the lateral awns of the lemmas much reduced, sometimes obsolete.

2. *T. pluriflora*.

1. *Trichloris mendocina* (Philippi) Kurtz, Mem. Fac. Ci. Univ.

Córdoba 1896: 37. 1897.

Chloris mendocina Philippi, Anal. Univ. Chile 36: 208. 1870. (Type from Mendoza, Argentina [Philippi].)

Trichloris (?) *Blanchardiana* Fourn.; Scribn. Bull. Torrey Club 9: 146. 1882. (Type from Tucson, Arizona, Pringle.)

Chloridiopsis [error for *Chloropsis*] *Blanchardiana* Gay; Scribn. Bull. Torrey Club 9: 146, as synonym of *Trichloris Blanchardiana* Fourn. 1882.

Trichloris verticillata Fourn.; Vasey, Cat. Grasses U. S. 61, name only. 1885; Bull. U. S. Dep. Agr. Bot. 12: no. 25. 1891. (Type from Tucson, Arizona, Pringle.)

Trichloris fasciculata Fourn. Mex. Pl. Gram. 2: 142. 1886. (Type from San Luis de Potosí, Mexico, Virlet 1440.)

Chloropsis Blanchardiana Kuntze, Rev. Gen. 771. 1891. (Based on *Trichloris Blanchardiana* Hack. [error for Fourn.])

Chloropsis fasciculata Kuntze, Rev. Gen. 771. 1891. (Based on *Trichloris fasciculata* Fourn.)

Chloropsis mendocina Kuntze, Rev. Gen. 3: 348. 1898. (Based on *Chloris mendocina* Philippi.)

Leptochloris Greggii Munro; Merrill, Circ. U. S. Dep. Agr. Agrost. 32: 7, as synonym of *Chloropsis mendocina* Kuntze. 1901.

Culms erect, or sometimes decumbent at the base, branching, 40–80 cm. tall; sheaths compressed-keeled, the lower ones much longer than the internodes, glabrous; ligule ciliate, 1 mm. long; blades 10–25 cm. long, 2–4 mm. wide, conduplicate, attenuate, scabrous, sparsely to densely pilose on the upper surface toward the base; spikes 10–18, 5–12 cm. long, crowded, closely appressed, the spikelets hidden by the numerous awns; glumes acute, the first about 1 mm. long, short-awned, the second 1.5 mm. long, the awn 1.5–3 mm. long; lemma of the fertile floret 3 mm. long, the 3 slender awns 10 mm. long, scabrous; awns of the rudimentary floret shorter than those of the fertile lemma.

TYPE LOCALITY: Mendoza, Argentina (*Philippi*).

DISTRIBUTION: Plains and rocky hills, western Texas to Arizona; northern Mexico; also in Paraguay, Bolivia, and Argentina.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12: pl. 25; Bull. U. S. Dep. Agr. Agrost. 7: f. 189; Hitchc. Man. f. 1079.

2. *Trichloris pluriflora* Fourn. Mex. Pl. Gram. 2: 142. 1886.

Chloropsis pluriflora Kuntze, Rev. Gen. 771. 1891. (Based on *Trichloris pluriflora* Fourn.)

Culms rather coarse, 60–140 cm. tall, erect, simple or sparingly branching, sheaths, except the lowermost, much shorter than the internodes, obscurely keeled, glabrous; ligule membranaceous, minutely erose, 0.5 mm. long; blades mostly 15–35 cm. long, 5–12 mm. wide,

firm, flat, attenuate, scabrous; spikes 6–20, 5–15 cm. long, narrowly ascending, the spikelets not greatly obscured by the awns; glumes acuminate, awn-pointed, the first 2.5–3 mm. long, the second about 4 mm. long; lower lemma 4 mm. long, the upper ones successively shorter, the central awn 5–15 mm. long, the lateral ones very short or obsolete.

TYPE LOCALITY: Mexico (*Karwinsky*).

DISTRIBUTION: Sandy plains and dry woods, Texas and Mexico; also from Ecuador to Argentina.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12: *pl.* 24; Bull. U. S. Dep. Agr. Agrost. 7: *f.* 190; Hitchc. Man. *f.* 1079B.

147. **CTENIUM** Panzer, Denks. Akad. Münch. 1813:
Math.-Phys. 288. 1813.

Campulosus Desv. Nouv. Bull. Soc. Philom. 2: 189. 1810. (Type species, *Chloris monostachya* Michx.)

Monocera Ell. Bot. S. C. & Ga. 1: 176. 1816. (Type species, *Aegilops aromatica* Walt.)

Monathera Raf. Am. Mo. Mag. 4: 190. 1819. (Based on *Monocera* Ell.)

Erect, usually tufted perennial grasses with tall slender culms, firm flat narrow blades, and usually solitary, arcuate or flexuous spikes. Spikelets several-flowered, sessile in two rows on one side of a flattened rachis, the rachilla disarticulating above the glumes, the first two florets sterile, the third fertile, the upper ones remote, much smaller, staminate or neuter; first glume short, acute, 1-nerved; second glume acute or subacuminate, 2–3-nerved, the nerves approximate, the lateral ones usually with a conspicuous row of glands, the central one excurrent from the middle of the back in a stout or rather slender divergent awn; florets bearded on the callus; lemmas acute or acuminate, sometimes minutely toothed, 3-nerved, the margins variously ciliate, awned from the back or from between the teeth, the awn of the second sterile lemma usually much longer than the others; palea subacute or subobtusate, as long as the lemma, narrow, the nerves sometimes excurrent in short awns.

Type species, *Ctenium carolinianum* Panzer.

Spikes solitary.

Culms tufted; rhizomes wanting.

Fertile lemma long-ciliate on the upper half of the margins; second glume acuminate, the tip rather thin.

Sterile lemmas pubescent or villous on the back, the awn of the second 4–6 mm. long.

Sterile lemmas nearly glabrous on the back, the awn of the second 10–15 mm. long.

Fertile lemma ciliate on the margins at the middle, the cilia comparatively short and inconspicuous; second glume acute, the tip relatively firm.

Culms solitary; rhizomes present.

Spikes 2 or 3, digitate.

1. *C. planifolium*.
2. *C. concissum*.
3. *C. aromaticum*.
4. *C. floridanum*.
5. *C. plumosum*.

1. **Ctenium planifolium** (Presl) Kunth, Rév. Gram. Suppl.
XXII. 1830.

Campulosus planifolius Presl, Rel. Haenk. 1: 287. 1830.

Ctenium glandulosum Scribn. & Smith, Bot. Gaz. 21: 362. 1896. (Type from Oaxaca, *Nelson 2814*.)

Culms 50–100 cm. tall, pubescent, especially below the spike; sheaths glabrous or scaberulous, rounded on the back; ligule membranaceous, 0.5–1 mm. long; blades 10–20 cm. long, 2–4 mm. wide, flat, acuminate or attenuate, scaberulous; spike 5–10 cm. long, subarcuate, becoming strongly flexuous, the rachis about 1.5 mm. wide, pubescent; first glume 2 mm. long, acute; second glume acuminate, 8 mm. long, pubescent, the tip rather thin, the awn slender, divergent, 2 mm. long; sterile lemmas pubescent and usually villous on the back, the first 3.5 mm. long with a straight or curved awn about 4 mm. long, the second 4.5 mm. long, with a recurved awn 5–6 mm. long, the margins long-ciliate almost from the base to the apex; fertile lemma 5–6 mm. long, the awn straight, 2–3 mm. long, the margins ciliate in the upper half, the cilia 2–3 mm. long; palea of the fertile floret subacute, scabrous on the keels, pubescent on the back, the nerves convergent near the summit, not excurrent; reduced upper florets 1–4, awnless, more or less ciliate on the margins; caryopsis 2 mm. long, obovate, reddish.

TYPE LOCALITY: Mexico (*Haenke*).

DISTRIBUTION: Oaxaca and Chiapas.

ILLUSTRATIONS: Bot. Gaz. 21: *pl.* 29; Rep. Mo. Bot. Gard. 10: *pl.* 42.

2. *Ctenium concisum* Swallen, sp. nov.

Perennial; culms erect, 35-100 cm. tall, pubescent below the spike; sheaths longer than the internodes, scaberulous, the lower ones becoming shredded with age; ligule membranaceous, 1 mm. long, truncate; blades as much as 30 cm. long, 2-4 mm. wide, flat or becoming sub-involute, acuminate, scaberulous; spike 5-16 cm. long, arcuate or becoming flexuous, the rachis 1.5 mm. wide, scabrous on the back, pubescent on the margins; first glume acute, 2 mm. long; second glume acuminate, 8-9 mm. long, scabrous, the awn slender, ascending or spreading, 3-5 mm. long, scaberulous; first sterile lemma 3 mm. long, glabrous on the back, the margins long-ciliate almost the entire length, the awn straight, 4 mm. long; second sterile lemma 4.5-5 mm. long, glabrous on the back, the margins long-ciliate on the upper half, the awn 10-15 mm. long, flexuous; fertile lemma 4-5 mm. long, the margins ciliate on the upper half, the cilia about 3 mm. long, the awn straight, 3 mm. long; palea of the fertile floret subobtusate, scabrous on the keels, the nerves sometimes excurrent in short awns; reduced upper floret 3 mm. long, with an awn about 1 mm. long.

Perenne; culmi erecti, 35-100 cm. alti, sub spica pubescentes; vaginae internodiis longiores, scaberulae, inferiores concissae; laminae ad 30 cm. longae, 2-4 mm. latae, acuminatae, scaberulae; spica 5-16 cm. longa, arcuata; gluma prima acuta, 2 mm. longa; gluma secunda acuminata, 8-9 mm. longa, scabra; primum lemma sterile 3 mm. longum, marginibus ciliatus, arista 4 mm. longa; secundum lemma sterile 4.5-5 mm. longum, marginibus in parte superiore ciliatis, arista flexuosa, 10-15 mm. longa; lemma fertile 4-5 mm. longa, marginibus in parte superiore ciliatis, arista recta 3 mm. longa; lemma reductum 3 mm. longum, arista 1 mm. longa.

Type collected at Picacho de Olá, Province of Coclé, Panama, alt. 350 to 600 meters, *Pittier no. 5065* (U. S. Nat. Herb. no. 715193).

DISTRIBUTION: Savannas, Coclé and Chiriquí provinces, Panama.

3. *Ctenium aromaticum* (Walt.) Wood, Class-Book ed. 1861.

806. 1861.

Aegilops aromaticum Walt. Fl. Car. 249. 1788. (Type from South Carolina.)

Nardus scorpioides Lam. Tab. Encyc. 1: 152. 1791. (Type from America.)

Chloris monostachya Michx. Fl. Bor. Am. 1: 59. 1803. (Type from South Carolina, Michaux.)

Campulosus gracilior Desv. Nouv. Bull. Soc. Philom. 2: 189. 1810. (Based on *Chloris monostachya* Michx.)

Campulosus monostachyus Beauv. Agrost. 64, 157, 158. 1812. (Based on *Chloris monostachya* Michx.)

Ctenium carolinianum Panzer, Denks. Akad. Münch. 1813: Math. Phys. 311. 1813. (Type from South Carolina.)

Campulosa gracilis Desv. Jour. de Bot. Desv. II. 1: 69. 1813. (Based on *Chloris monostachya* Michx.)

Monocera aromatica Ell. Bot. S. C. & Ga. 1: 177. 1816. (Based on *Aegilops aromaticum* Walt.)

Campulosa monostachya R. & S. Syst. Veg. 2: 516. 1817. (Based on *Chloris monostachya* Michx.)

Cynodon monostachyos Rasp. Ann. Sci. Nat. 5: 303. 1825. (Based on *Campulosus monostachyus* Desv. [error for Beauv.]

Ctenium americanum Spreng. Syst. 1: 274. 1825. (Type from North America, *Chloris monostachya* Michx., cited as synonym.)

Campulosus aromaticus Trin.; Steud. Nom. Bot. ed. 2. 1: 272, as synonym of *C. monostachyus* Beauv. 1840.

Chloris piperita Michx.; Steud. Nom. Bot. ed. 2. 1: 353, as synonym of *Campulosus monostachyus* Beauv. 1840.

Rotiboaella scorpioides Poir.; Steud. Nom. Bot. ed. 2. 2: 474, as synonym of *Ctenium americanum* Spreng. 1841.

Campulosus gracilis Bertol. Mem. Accad. Bologna 2: 602. 1850. (Type specimen from Alabama.)

?*Campulosus gangitis* Kuntze, Rev. Gen. 764. 1891. (Based on *Nardus gangitis* L., taken up for *Ctenium aromaticum*.)

Campulosus aromaticus Scribn. Mem. Torrey Club 5: 45. 1894. (Based on *Aegilops aromaticum* Walt.)

?*Ctenium gangitum* Druce, Rep. Bot. Exch. Club Brit. Isles 3: 416. 1914. (Based on *Nardus gangitis* L., taken up for *C. aromaticum*.)

Culms densely tufted, erect, 1-1.5 meters tall, pubescent below the spike; sheaths shorter than the internodes, rounded on the back, scaberulous, the lower ones becoming shredded with age; ligule membranaceous, 1-3 mm. long, erose; culm-blades flat or involute, 5-10 cm. long, 1-3 mm. wide, glabrous or scaberulous, those on the innovations as much as 40 cm. long, 5 mm. wide, often rolled and tortuous; spike 5-15 cm. long, arcuate; first glume 2.5 mm.

long, acuminate; second glume 5-7 mm. long, acute, scabrous between the nerves, the margins glabrous, the awn stout, awl-shaped, scabrous, 3-5 mm. long; first sterile lemma 3-5 mm. long, the margins ciliate at the middle, the awn straight, 2-3 mm. long; second sterile lemma 4-6 mm. long, with a tuft of hairs on the margins at the middle, otherwise glabrous or nearly so, the awn stout, curved, 4-5 mm. long; fertile lemma 4.5-5.5 mm. long, the margins ciliate at the middle, glabrous on the back, the awn 1-2 mm. long; reduced upper floret 3-4 mm. long, glabrous, nearly awnless.

TYPE LOCALITY: South Carolina.

DISTRIBUTION: Wet pine barrens on the Coastal Plain, New Jersey to Florida and Louisiana.

ILLUSTRATIONS: Denks. Akad. Münch. 1813: Math.-Phys. pl. 13, f. 1, 2; Bertol. Mem. Accad. Bologna 2: pl. 43, f. a, b, c; Bull. U. S. Dep. Agr. Agrost. 7: f. 178; Bull. U. S. Dep. Agr. 772: f. 110; Britt. & Brown, Ill. Fl. f. 406; ed. 2. f. 543; Hitchc. Man. f. 1052.

4. *Ctenium floridanum* (Hitchc.) Hitchc. Proc. Biol. Soc. Wash.

41: 162. 1928.

Campulosus floridanus Hitchc. Am. Jour. Bot. 2: 306. 1915.

Culms solitary or in loose clumps, erect from scaly rhizomes, 50-110 cm. tall, pubescent below the spike; sheaths much shorter than the internodes, rounded on the back, glabrous; ligule membranaceous, 1-3 mm. long; culm-blades 8-15 cm. long, 2-3 mm. wide, flat or involute, glabrous, those on the innovations as much as 25 cm. long, 4 mm. wide; spike 5-20 cm. long, arcuate to scorpioid, the rachis 1 mm. wide, glabrous or scabrous; first glume 2 mm. long, acute, more or less pilose; second glume 6-7 mm. long, acute or acuminate, scabrous, the glands on the nerves obscure or nearly wanting, the awn not as stout or as squarrose as in *C. aromaticum*; first sterile lemma 4 mm. long, evenly ciliate on the margins, the straight slender awn 2-4 mm. long; second sterile lemma 5-6 mm. long, the margins ciliate at the middle, the hairs longer upward, the awn straight, 4-5 mm. long; fertile lemma 4.5-5 mm. long, the margins ciliate from below the middle to near the summit, the back scabrous, the awn straight, 2-3 mm. long; upper reduced floret 3 mm. long, scabrous, awnless.

TYPE LOCALITY: Florida (Curtiss in 1875).

DISTRIBUTION: Moist pine barrens and flat woods, Florida.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 179; Hitchc. Man. f. 1054.

5. *Ctenium plumosum* (Hitchc.) Swallen, comb. nov.

Campulosus plumosus Hitchc. Contr. U. S. Nat. Herb. 17: 330. 1913.

Culms slender, tufted, erect, 70-80 cm. tall, minutely pubescent especially below the spikes and the nodes; sheaths rounded on the back, scaberulous, all but the lower ones much shorter than the internodes; ligule membranaceous, truncate, about 1 mm. long; blades 10-25 cm. long, 1-2 mm. wide, firm, attenuate, becoming involute, scabrous; spikes 2 or 3, digitate, flexuous, 5-10 cm. long, the scabrous rachis 1 mm. wide, ciliate; first glume 2 mm. long, acute, glandular on the keel toward the base; second glume 5 mm. long, acute, hirsute on the keel below the stout, horizontal awn, the margins glabrous; first sterile lemma 2.5 mm. long, the margins ciliate nearly to the apex, the slender awn from near the middle, about 4 mm. long; second sterile lemma 3 mm. long, the margins ciliate from below the middle, the hairs longer upward, the awn 8-10 mm. long from between two short teeth; fertile lemma 3 mm. long, the margins long-ciliate in the upper half, the awn 3 mm. long; palea about as long as the lemma; upper reduced florets 2, glabrous, awnless, the lower 2 mm. long.

TYPE LOCALITY: Culiacán, Sinaloa (Brandege).

DISTRIBUTION: Known only from the type locality.

148. *LEPTURIDIUM* Hitchc. & Ekman, Misc. Publ. U. S. Dep.

Agr. 243: 111. 1936.

Perennial grasses with short, distichous, pungent, spreading blades and solitary terminal spikes. Spikelets sessile, 2-flowered, on two sides of the three-angled rachis, the upper floret more or less reduced, the rachilla disarticulating above the glumes and between the florets,

produced beyond the upper floret; glumes equal, about as long as the lower floret, 1-nerved, firm, the margins rather thin; lemma of the lower floret 3-nerved, thin, villous, mucronate from between two short teeth; palea thin, a little shorter than the lemma, deeply sulcate; lemma of the second floret similar to that of the first but often smaller or sometimes much reduced; stamens 3.

Type species, *Lepturidium insulare* Hitchc. & Ekman.

1. *Lepturidium insulare* Hitchc. & Ekman, Misc. Publ. U. S.
Dep. Agr. 243: 111. 1936.

Perennial; culms densely tufted, erect, decumbent at the base or prostrate, 10-30 cm. long; sheaths much longer than the internodes, rounded, glabrous on the back, the margins ciliate, densely villous at the mouth; ligule ciliate, 1 mm. long; blades 1-2 cm. long, distichous, ascending or spreading, firm, pungent, involute, glabrous; spike slender, stiff, erect, 5-8 cm. long, partly enclosed in the upper sheath or sometimes barely exerted; glumes acute, 3 mm. long, spreading, glabrous, the midnerve hard; lemma of the lower floret 2.5 mm. long, villous, mucronate, the lemma of the upper floret similar or much reduced; rachilla-joint slender, 1-1.5 mm. long, bearded at the summit; stamens about 0.5 mm. long.

TYPE LOCALITY: Santa Bárbara, Isla de Pinos, Cuba (*Ekman 12060*).

DISTRIBUTION: White saline sandy flats, Isla de Pinos, Cuba.

ILLUSTRATION: Misc. Publ. U. S. Dep. Agr. 243: f. 71.

149. *SAUGETIA* Hitchc. & Chase, Contr. U. S. Nat. Herb.
18: 378. 1917.

Densely tufted perennial grasses with wiry branching culms, subinvolute blades, and 1-3 narrow spikes, the spikelets appressed, approximate on one side of the flattened rachis. Spikelets 1-flowered, the floret stipitate, the prolonged rachilla bearing a very rudimentary second floret; glumes narrow, acuminate, unequal, 1-nerved; lemma firm, 3-nerved, minutely toothed at the apex, bearing a delicate awn from between the teeth; palea a little shorter than the lemma, acute, sulcate.

Type species, *Saugetia fasciculata* Hitchc. & Chase.

Spikes solitary; lemma 3.2 mm. long.

Spikes usually 2 or 3; lemma 4 mm. long.

1. *S. fasciculata*.

2. *S. pleiostachya*.

1. *Saugetia fasciculata* Hitchc. & Chase, Contr. U. S. Nat.
Herb. 18: 378. 1917.

Culms in dense hard tufts, erect or spreading, 40-50 cm. tall, freely branching from all the nodes, the internodes of the main branches elongate; sheaths rounded, glabrous on the back, villous at the throat; blades filiform, flexuous, glabrous, as much as 10 cm. long, much shorter on the reduced fascicled branches; ligule obsolete; spike solitary, long-exserted, erect, 3-5 cm. long, the rachis flattened toward the base, becoming triangular toward the summit, the margins sparsely hispid; spikelets narrow, rather distant, closely appressed; glumes narrow, acuminate, the first 0.7-0.8 mm. long, the second 2-2.5 mm. long; lemma 3.2 mm. long, glabrous, the awn 12-16 mm. long, erect, scabrous, very slender and flexuous toward the tip.

TYPE LOCALITY: San Julián, Pinar del Río, Cuba (*Leon 6901*).

DISTRIBUTION: Limestone cliffs, borders of woods, and thickets, Cuba and Hispaniola.

ILLUSTRATION: Misc. Publ. U. S. Dep. Agr. 243: f. 77.

2. *Saugetia pleiostachya* Hitchc. & Ekman, Misc. Publ. U. S.
Dep. Agr. 243: 123. 1936.

Culms coarser, apparently less densely tufted than the preceding species, straggling, 50-80 cm. long; sheaths rounded, glabrous on the back, villous at the throat; ligule very short, minutely lacerate; blades firm, flexuous, flat or subinvolute, as much as 15 cm. long, 1 mm. wide, glabrous on both surfaces, the margins sparsely appressed-hispid toward the base;

spikes 1-3, conjugate or subdigitate, sometimes naked for a short distance at the base, finally exerted, 8-12 cm. long; first glume reduced to a short bristle, sometimes nearly obsolete, the second narrow, subattenuate, 2-4 mm. long, glabrous; lemma about 4 mm. long, acute, glabrous, the awn 10-20 mm. long, finely scabrous, capillary toward the tip.

TYPE LOCALITY: Mendoza, Pinar del Rio, Cuba (*Ekman 11483*).

DISTRIBUTION: Limestone hills; known only from the type locality.

150. *TRIPOGON* R. & S. Syst. Veg. 2: 34, 600. 1817.

Small densely tufted perennial grasses with soft involute blades and solitary spikes. Spikelets several-flowered, laterally flattened, approximate but not crowded on one side of the slender flattened rachis, the rachilla disarticulating above the glumes and between the florets; glumes narrow, acute, 1-nerved, the second a little longer than the first; lemmas subacute, 3-nerved, minutely bifid, short-awned from between the teeth.

Type species, *Tripogon bromoides* Roth.

1. *Tripogon spicatus* (Nees) Ekman, Ark. Bot. 11⁴: 36. 1912.

Bromus spicatus Nees, Agrost. Bras. 471. 1829. (Type from Piauhy, Brazil.)

Diplachne spicata Doll, in Mart. Fl. Bras. 2^o: 159. 1878. (Based on *Bromus spicatus* Nees.)

Triodia Schaffneri S. Wats. Proc. Am. Acad. 18: 181. 1883. (Type from San Luis Potosí, Mexico, Schaffner 1077.)

Diplachne Reverchonii Vasey, Bull. Torrey Club 13: 118. 1886. (Type from Llano County, Texas, Reverchon.)

Leptochloa spicata Scribn. Proc. Acad. Phila. 1891: 304. 1891. (Based on *Diplachne spicata* Doell.)

Sieglingia Schaffneri Kuntze, Rev. Gen. 789. 1891. (Based on *Triodia Schaffneri* S. Wats.)

Rabdochloa spicata Kuntze; Stuck. Anal. Mus. Nac. Buenos Aires III. 4: 121. 1904. (Based on *Bromus spicatus* Nees.)

Sieglingia spicata Kuntze; Stuck. Anal. Mus. Nac. Buenos Aires III. 4: 128. 1904. (Based on *Bromus spicatus* Nees.)

Culms 5-25 cm. tall, erect, slender, glabrous; leaves crowded at the base; sheaths compressed, glabrous, villous at the throat; ligule minutely ciliate; blades 2-6 cm. long, soft, involute, glabrous; spike 1-10 cm. long, erect; spikelets overlapping but not crowded, 5-10-flowered, mostly 6-8 mm. long; glumes narrow, acute, glabrous, the first 1.5-2.5 mm. long, the second 2-3 mm. long; lemma 2.5-3 mm. long, pilose on the margins at the very base, otherwise glabrous, the awn about 0.5 mm. long.

TYPE LOCALITY: Piauhy, Brazil.

DISTRIBUTION: Rocky hills and gravelly plains, infrequent, central Texas, central Mexico, and Cuba; also from Brazil to Argentina.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12^o: pl. 43; Bull. U. S. Dep. Agr. Agrost. 7: f. 211; Hitchc. Man. f. 1026; Misc. Publ. U. S. Dep. Agr. 243: f. 70.

151. *GYMNOPOGON* Beauv. Agrost. 41. 1812.

Anthopogon Nutt. Gen. 1: 81. 1818. (Type species, *Andropogon ambiguus* Michx.)

Biatherium Desv. Opusc. 72. 1831. (Type species, *Chloris foliosa* Willd.)

Monochaete Doll, in Mart. Fl. Bras. 2^o: 78. 1878. (Type species, *Gymnopoogon fastigiatus* Nees.)

Doellochloa Kuntze, Rev. Gen. 773. 1891. (Based on *Monochaete* Doll.)

Annual or usually perennial grasses with erect stiff culms, rounded sheaths, firm, flat or loosely rolled, stiffly spreading blades, and few to numerous slender spikes scattered along the upper half or third, or crowded at the summit of the culm. Spikelets 1-3 flowered, articulated above the glumes, subsessile in two rows on one side of the slender rachis, the rachilla prolonged beyond the upper floret, often bearing a very rudimentary floret, this sometimes reduced to awns; glumes narrow, acuminate, 1-nerved, nearly equal, longer than the florets; lemmas narrow, 3-nerved, awned from between the teeth of a minutely bifid apex, or sometimes almost awnless.

Type species, *Andropogon ambiguus* Michx.

Spikes 2-7 cm. long, narrowly ascending, crowded toward the summit of the culm.

Plants annual; callus sharp-pointed, densely pubescent.

Plants perennial; callus blunt, glabrous.

Spikes more than 10 cm. long, ascending or widely spreading, scattered along the upper third or half of the culm.

1. *G. foliosus*.

2. *G. fastigiatus*.

Awns of the lemmas 4-12 mm. long.

Glumes awnless or awn-pointed.

Spikes floriferous to the base; awn of the lemma 4-6 mm. long.
Spikes floriferous only in the upper half, or the lower half with a few very imperfect spikelets; awn of the lemma 8-12 mm. long.

Glumes with awns about 1 cm. long.

Awns of lemmas 1-3 mm. long.

Spikelets 2-3-flowered; spikes floriferous to the base.

Spikes ascending, usually more than 20; glumes widely spreading even in young spikelets.

Spikes spreading or reflexed, usually less than 15; glumes not widely spreading even in mature spikelets.

Spikelets 1-flowered; spikes floriferous only in the upper half.

3. *G. ambiguus*.

4. *G. spicatus*.

5. *G. aristigulmis*.

6. *G. Chapmanianus*.

7. *G. floridanus*.

8. *G. brevifolius*.

1. *Gymnopogon foliosus* (Willd.) Nees, *Agrost. Bras.* 426. 1829.

Chloris foliosa Willd. Sp. Pl. 4: 924. 1806. (Type from St. Thomas.)

Biatherium foliosum Desv. Opusc. 72. 1831.

Gymnopogon pullulans Döll, in Mart. Fl. Bras. 2^o: 82. 1878.

Annual; culms usually stiffly erect or sometimes decumbent at the base, freely branching, mostly 10-30 cm. tall (rarely as much as 50 or 60 cm.), the lower internodes short, the upper ones elongate and exerting the inflorescence well above the foliage; sheaths longer than the internodes, glabrous on the back, the margins long-ciliate, especially toward the summit; ligule very short, minutely ciliate; blades stiffly spreading, involute, or sometimes flat, 1-2 cm. long, 1-2 mm. wide, glabrous; spikes 3-7, erect or ascending, approximate, 2-3 cm. long or much shorter on the branches; spikelets imbricate, appressed; glumes acuminate, spreading, 3 mm. long, scabrous on the keel; lemma 2.5 mm. long, the sharp callus 0.5 mm. long, densely short-bearded, glabrous or nearly so, the awn very slender, about 7 mm. long; rudiment reduced to two slender awns, a little shorter than that of the lemma.

TYPE LOCALITY: St. Thomas.

DISTRIBUTION: Dry sterile open sandy land, Hispaniola, Puerto Rico, and St. Thomas; also in Peru and Brazil.

ILLUSTRATIONS: Trin. Ic. pl. 311; Desv. Opusc. 72, pl. 5, f. 2; Mart. Fl. Bras. 2^o: pl. 23, f. 1 (as *G. pullulans*).

2. *Gymnopogon fastigiatus* Nees, *Agrost. Bras.* 430. 1829.

Monochoete fastigiata Döll, in Mart. Fl. Bras. 2^o: 79. 1878.

Doellochloa fastigiata Kuntze, Rev. Gen. 773. 1891.

Perennial; culms very slender, erect or spreading, 30-60 cm. tall; sheaths usually much shorter than the internodes, glabrous or sparsely pilose at the mouth; ligule ciliate, 0.1 mm. long; blades flat or rolled, firm, stiffly ascending or sometimes spreading, 1-3 cm. long, 1-3 mm. wide, the margins scabrous; spikes 4-8, 2-7 cm. long, slender, ascending, on an axis 1-4 cm. long; spikelets 1-flowered, the rachilla prolonged behind the floret, the rudimentary floret wanting; glumes acuminate, about 3 mm. long; lemma 2 mm. long, the callus glabrous, the margins long-ciliate toward the summit, the awn very slender, about 1 cm. long.

TYPE LOCALITY: Brazil.

DISTRIBUTION: Savannas and open woods, Costa Rica and Panama; also in Brazil.

ILLUSTRATION: Mart. Fl. Bras. 2^o: pl. 22.

3. *Gymnopogon ambiguus* (Michx.) B.S.P. Prel. Cat. N. Y.

69. 1888.

Andropogon ambiguus Michx. Fl. Bor. Am. 1: 58. 1803.

Gymnopogon racemosus Beauv. *Agrost.* 41, 164. 1812. (Based on *Andropogon ambiguus* Michx.)

Anthopogon lepturoides Nutt. Gen. 1: 82. 1818. (Type from Harpers Ferry, Virginia, Nuttall.)

Gymnopogon scoparius Trin. Gram. Unifl. 237. 1824. (Type from New Jersey.)

Gymnopogon distichophyllus Steud. Syn. Gram. 218. 1854. (Type from Texas, Vincent 128.)

Perennial; culms strictly erect from short knotty rhizomes, slender at the base and thickening upward, 20-60 cm. tall, glabrous; sheaths crowded, much longer than the internodes or the lower ones a little shorter, glabrous, appressed-hispid on the collar; blades flat, abruptly spreading, acute, broadly lanceolate, subcordate at the base, 4-8 cm. long, 6-12 mm. wide,

glabrous; ligule about 0.2 mm. long; inflorescence one third to one half the length of the culm, the spikes numerous, mostly 12–15 cm. (rarely as much as 20 cm.) long, stiffly spreading, sometimes reflexed, floriferous to the base; spikelets 1-flowered, rather distant, at least on the lower part of the spike, appressed; glumes acuminate, 4–6 mm. long, scabrous on the keel; lemma about 4 mm. long, the callus densely short-bearded, the margins glabrous or sparsely pilose, the awn 4–6 mm. long; rudiment inconspicuous, often reduced to an awn about 4 mm. long.

TYPE LOCALITY: Carolina (*Michaux*).

DISTRIBUTION: Dry woods, coastal plain, from New Jersey to Florida and Texas; Tennessee to Kansas, and southward; Hispaniola.

ILLUSTRATIONS: Beauv. *Agrost. pl. 9. f. 3*; Bull. U. S. Dep. Agr. *Agrost. 7: f. 191*; Bull. U. S. Dep. Agr. *772: f. 111*; Britt. & Brown, *Ill. Fl. f. 408*; ed. 2. *f. 545*; Hitchc. *Man. f. 1055*.

4. *Gymnopogon spicatus* (Spreng.) Kuntze, Rev. Gen.

3³: 354. 1898.

Polygonum spicatus Spreng. *Syst. 1: 243*. 1825.

Gymnopogon laevis Nees, *Agrost. Bras. 428*. 1829. (Type from Montevideo, Uruguay.)

Gymnopogon filiformis Griseb. *Fl. Brit. W. Ind. 538*. 1864. (Type from Trinidad, *Crueger 89*.)

Perennial; culms slender, erect, 30–100 cm. tall (usually more than 50 cm.), more or less branching; sheaths overlapping, glabrous or pilose at the throat; ligule very short, minutely ciliate; blades flat or loosely rolled, 2–4 cm. (rarely to 6 cm.) long, 3–6 mm. (rarely to 9 mm.) wide, acute, mostly stiffly spreading, glabrous, the margins scabrous; panicle very open, sprawling and tangled with age; spikes few to several, 15–25 cm. long, very slender, flexuous, spreading or drooping, rather distant, naked toward the base or with a few imperfect spikelets; spikelets 1–2-flowered, somewhat imbricate on the upper half of the spikes; glumes acuminate, awn-pointed, 5–6 mm. long; lemma 2.5–3 mm. long, the callus sparsely pilose, the back and margins glabrous or sparsely pilose, the awn slender, scabrous, 8–12 mm. long; rudiment very small or reduced to an awn about 5 mm. long.

TYPE LOCALITY: Brazil (*Sellow*).

DISTRIBUTION: Sterile hills and savannas, Mexico (Vera Cruz), British Honduras, and Guatemala; Trinidad; also from Venezuela to Bolivia and Uruguay.

5. *Gymnopogon aristiglumis* Hitchc. Proc. Biol. Soc. Wash.

40: 82. 1927.

Very similar in aspect to *G. spicatus*, differing in having long-awned glumes, 10 mm. long, larger panicles, and blades as much as 9 cm. long and 10 mm. wide; spikelets on the lower part of the spikes reduced to awns.

TYPE LOCALITY: Rosario, El Salvador (*Calderón 1924*).

DISTRIBUTION: Open grassy slopes, El Salvador; also in Brazil.

6. *Gymnopogon Chapmanianus* Hitchc. Am. Jour. Bot.

2: 306. 1915.

Perennial; culms rather densely tufted, erect, sparingly branched at the base, 30–55 cm. tall; sheaths overlapping, glabrous; ligule about 0.5 mm. long, minutely ciliate; blades flat, stiffly ascending, 3–8 cm. long, 3–7 mm. wide, glabrous, the margins scabrous; spikes 10–32, usually more than 20, 10–17 cm. long, stiffly ascending, the lower ones partly enclosed in the upper sheath, floriferous from the base; spikelets 2–3-flowered, evenly placed on the rachis, appressed; glumes very narrow, acuminate, widely spreading even when young, exposing the florets, 3–5 mm. long; lower floret about 2 mm. long, the upper ones successively smaller, spreading, the callus densely bearded; lemma acute, minutely bifid, sparsely to rather densely pilose, awnless or with an awn 0.5–3 mm. long.

TYPE LOCALITY: Sanford, Florida (*Chase 4135*).

DISTRIBUTION: Sandy pine woods, Florida.

ILLUSTRATION: Hitchc. *Man. f. 1059*.

7. *Gymnopogon floridanus* Swallen, sp. nov.

Perennial; culms in small tufts, erect, 15-45 cm. tall; sheaths glabrous, the lower ones short, crowded, the upper one as much as 12 cm. long, about equaling the base of the panicle; ligule an irregular line of hairs less than 0.5 mm. long; blades 2.5 cm. long, 2-4 mm. wide, flat, distichous, subcordate, stiffly spreading, glabrous, scabrous on the margins; spikes 5-20, usually less than 15, stiffly spreading or reflexed, 5-16 cm. long, floriferous from the base, the lower spikelets sometimes abortive, the rachis scabrous, the pulvini densely villous; spikelets 3-5 mm. long, subsessile, appressed, 2-3-flowered; glumes acuminate, one-nerved, as long as the florets or sometimes exceeding them, never widely spreading exposing the florets, scabrous on the keels and often on the margins; florets 2-2.2 mm. long, the callus blunt, densely bearded; lemma acute, minutely bifid, usually densely ciliate on the margins, sparsely pilose across the back especially toward the base, the awn 0.5-2 mm. long, sometimes wanting; palea as long as the lemma or slightly exceeding it.

Perennis; culmi caespitiosi, erecti, 15-45 cm. alti; vaginae glabrae, breves, internodiis longiores, supra ad 12 cm. longa; ligula ciliata 0.5 mm. longa; laminae 2-5 cm. longae, 2-4 mm. latae, planae, distichae, subcordatae, glabrae, marginibus scabris; spicae 5-20, divergentes vel reflexae, ad basim floriferae; spiculae 3-5 mm. longae, 2-3 florum, subsessiles, appressae; glumae aequales, acuminatae, 1-nervae, carinis scabris; lemma 2-2.2 mm. longum, acutum, minutely bifidum, pilosum, marginibus ciliatis, callo dense piloso; aristae 0.5-2 mm. longae; palea lemma aequans.

Type collected on open sandy prairie, Penny Farms, Clay County, Florida, Nov. 15, 1938, Swallen 5596 (U. S. Nat. Herb. no. 1723536).

DISTRIBUTION: Sandy prairies, peninsular Florida.

8. *Gymnopogon brevifolius* Trin. Gram. Unifl. 238. 1824.

Anthopogon filiforme Nutt. Trans. Am. Phil. Soc. II. 5: 152. 1837. (Type from Delaware, Nuttall.)

Perennial; culms slender, erect or sometimes decumbent at the base, simple or sparingly branched, 25-60 cm. tall; sheaths overlapping, scabrous; ligule about 0.5 mm. long, minutely ciliate; blades flat, 2-4 cm. (rarely 6 cm.) long, 4-8 mm. wide, acute, glabrous; spikes few to numerous, mostly 10-15 cm. long, very slender, abruptly spreading or reflexed, spikelet-bearing on the upper half; spikelets rather distant, appressed; glumes acuminate, 3-4 mm. long, scabrous on the keel; lemma 2.5-3 mm. long, acute, the callus short-bearded, the back and margins sparsely pilose or nearly glabrous, the awn about 1 mm. long; rudiment wanting.

TYPE LOCALITY: Delaware.

DISTRIBUTION: Dry pine woods and open grounds, New Jersey to Florida, Arkansas, and Louisiana, on the coastal plain.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 192; Britt. & Brown, III. Fl. f. 409; ed. 2. f. 546; Hitchc. Man. f. 1057.

152. *GOUINIA* Fourn.; Benth. & Hook. Gen. Pl. 3: 1178. 1883.

Tricuspis § *Neurolepharum* Griseb. Abh. Ges. Wiss. Gött. 19: 259. 1874. (Pl. Lorentz. 211. 1874.) (Type species, *T. latifolia* Griseb.)

Pogochloa S. Moore, Trans. Linn. Soc. II. 4: 509. pl. 37. f. 9-23. 1895. (Type species, *P. brasiliensis* S. Moore.)

Perennial grasses with simple or branching culms and terminal panicles of slender, one-sided, simple or rarely compound spikes. Spikelets 2-several-flowered, the rachilla articulated above the glumes and between the florets, the upper one reduced to a sterile awned rudiment; glumes subequal, 1-several-nerved, shorter than the spikelets; lemma lanceolate, 3-nerved (rarely 5-nerved), long-awned, densely ciliate below on both sides of the midnerve and ciliate or pilose on the margins for about half the length (margins glabrous or nearly so in *G. papillosa*); palea two-keeled, toothed, the teeth sometimes aristate, the margins glabrous or pubescent.

Type species, *Gouinia polygama* Fourn.

Panicle-branches spikelet-bearing from the base or nearly so.

Blades involute; spikelets stiffly spreading.

Blades flat; spikelets appressed.

Panicle-branches naked below, usually for nearly half their length.

1. *G. gracilis*.

2. *G. virgata*.

- Panicle-branches compound, loosely flowered; awns 6–12 mm. (usually about 10 mm.) long. 3. *G. papillosa*.
- Panicle-branches simple (rarely a short branchlet below in *G. mexicana*). Culms branching; panicle-branches lax; plants about 3 meters tall. 4. *G. ramosa*.
- Culms simple.
- Lower panicle-branches more than 20 cm. long.
- Awns 2–3 mm. long; palea much shorter than the lemma. 5. *G. mexicana*.
- Awns 10–20 mm. long; palea about equaling the lemma. 6. *G. longiramea*.
- Lower panicle-branches less than 20 cm. (usually less than 15 cm.) long. 7. *G. guatemalensis*.

1. *Gouinia gracilis* Ekman; Swallen, Am. Jour. Bot. 22: 33. 1935.

Culms slender, branching, sprawling, 70 cm. or more long, glabrous; sheaths shorter than the internodes, scabrous or nearly smooth, more or less pilose; blades flat or usually involute, as much as 14 cm. long, not more than 2 mm. wide, scabrous, especially on the margins, pilose on the upper surface near the base; ligule membranaceous, 0.5 mm. long; panicles 5–15 cm. long, the branches stiffly spreading or reflexed, the lower as much as 4.5 cm. long; spikelets 2–3-flowered, short-pedicellate, stiffly and abruptly spreading or reflexed; glumes blunt, the first 2.5–4 mm. long, 1–3-nerved, the second 3.5–4.5 mm. long, 3–7-nerved; lemma 4–6 mm. long, dentate, the teeth sometimes aristate; awns 5–9 mm. long; palea a little shorter than the lemma, the margins densely pubescent.

TYPE LOCALITY: Cerro del Fraile, Holguín, Oriente, Cuba (Ekman).

DISTRIBUTION: Thickets, Cuba.

ILLUSTRATIONS: Am. Jour. Bot. 22: 34. f. 1; Misc. Publ. U. S. Dep. Agr. 243: f. 68.

2. *Gouinia virgata* (Presl) Scribn. Bull. U. S. Dep. Agr. Agrost. 4: 10. 1897.

Bromus virgatus Presl, Rel. Haenk. 1: 263. 1830.

Festuca laxiflora A. Rich. in Sagra, Hist. Cuba 11: 318. 1850.

Festuca Fournieriana Hemsl. Biol. Centr. Am. Bot. 3: 581. 1885.

Gouinia polygama Fourn.; Hemsl. Biol. Centr. Am. Bot. 3: 581, as synonym of *Festuca Fournieriana* Hemsl. 1885; Fourn. Mex. Pl. Gram. 2: 103. 1886.

Gouinia polygama var. *major* Fourn. Mex. Pl. Gram. 2: 103. 1886.

Diplachne virgata Hack. Oesterr. Bot. Zeits. 52: 276. 1902. (Based on *Bromus virgatus* Presl.)

Culms erect from a dense knotty base, 30–150 cm. tall; sheaths more or less keeled, longer than the internodes, scaberulous, papillose-pilose toward the summit; blades flat, 15–45 cm. long, 5–15 mm. wide, smooth or nearly so on both surfaces, the margins scabrous; ligule membranaceous, erose, about 1 mm. long; panicle 15–35 cm. long, the branches rather stiffly spreading, the lower 8–20 cm. (usually about 12 cm.) long, spikelet-bearing from the base or nearly so; spikelets lanceolate, 8–15 mm. long; glumes acute, scabrous on the keels, the first 4–5 mm. long, 1–3-nerved, the second 5–6 mm. long, 3–5-nerved (rarely 7-nerved); lemma 8–10 mm. long, acuminate, awned from the tip, the awn 10–17 mm. long; palea acuminate, 7–8 mm. long, the margins densely pilose below.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Wooded hills, Mexico and the West Indies, and southward to Peru.

ILLUSTRATION: Misc. Publ. U. S. Dep. Agr. 243: f. 69.

3. *Gouinia papillosa* Swallen, Publ. Carnegie Inst. Wash. 436: 334. 1934.

Culms erect from short knotty rhizomes, 115 cm. tall, glabrous; sheaths much longer than the internodes, at least some of them papillose-pilose with ascending hairs, especially on the collar; blades flat, 12–30 cm. long, 6–15 mm. wide, glabrous, the margins scabrous; ligule membranaceous, erose, 1 mm. long; panicle 30–40 cm. long, the compound branches drooping, distant, naked below; spikelets appressed, 3–4-flowered, 10 mm. long, the pedicels 2–8 mm. long; glumes acute, the first 4–5 mm. long, 1–3-nerved, the second 4.5–6.5 mm. long, 3–5-nerved; lemma 6–8 mm. long, acuminate, 3–5-nerved, the lateral nerves sometimes excurrent, the awns slender, scabrous, 6–12 mm. (usually about 10 mm.) long, the margins pilose, some-

times obscurely so; palea acuminate, a little shorter than the lemma, sparsely pilose, sometimes glabrous.

TYPE LOCALITY: Tancab, Quintana Roo (*Swallen 2829*).

DISTRIBUTION: Brushy borders, Yucatan Peninsula.

ILLUSTRATIONS: Publ. Carnegie Inst. Wash. 436: 335. f. 3; Am. Jour. Bot. 22: 35. f. 2.

4. *Gouinia ramosa* Swallen, Publ. Carnegie Inst. Wash.

436: 333. 1934.

Culms erect, about 3 meters tall, branching above, the branches spreading, resting on the surrounding brush, glabrous; sheaths scabrous, more or less papillose-pilose, especially at the mouth, the lower and those of the branches longer than the internodes, the upper often shorter than the internodes; blades flat, 10–20 cm. long, 8–14 mm. wide, scabrous below, nearly smooth above, sparsely pilose on both surfaces, sometimes densely hispid at the very base near the margins on the upper surface, the margins whitish, very scabrous; ligule membranaceous, erose, about 1 mm. long; panicle 20–25 cm. long, the branches slender, drooping, the lower as much as 12 cm. long, naked below for nearly half their length; spikelets short-pedicellate, appressed to the branches, 3-flowered, the rudiment often reduced to a bristle, the glumes, lemmas, and paleas firm; glumes acute to subobtuse, sometimes mucronulate, scabrous on the keel and on the back toward the tip, the first 4–4.5 mm. long, 1-nerved, the second 4.5–5 mm. long, 1–3-nerved; lemma 6–7 mm. long, the awn 4–7 mm. long, scabrous; palea equaling the lemma or a little shorter, scabrous, the margins glabrous.

TYPE LOCALITY: Chichen Itzá, Yucatan (*Swallen 2436*).

DISTRIBUTION: Brushy places, Yucatan Peninsula.

ILLUSTRATIONS: Publ. Carnegie Inst. Wash. 436: 333. f. 1; Am. Jour. Bot. 22: 34. f. 3.

5. *Gouinia mexicana* (Scribn.) Vasey, Contr. U. S. Nat. Herb.

1: 365. 1895.

Leptochloa mexicana Scribn. Bull. Torrey Club 3: 313. 1891; Proc. Acad. Phila. 1891: 302. 1891.
Diplachne mexicana Hack. Oesterr. Bot. Zeits. 52: 276. 1902. (Based on *Leptochloa mexicana* Scribn.)

Culms erect, 2 meters tall, glabrous; sheaths overlapping, glabrous or scaberulous; blades flat, 20–35 cm. long, 15–22 mm. wide, scaberulous or nearly smooth, the margins very scabrous; ligule about 1 mm. long, erose or short-ciliate; panicle 30–40 cm. long, the branches spreading, naked below, the lower as much as 26 cm. long; spikelets linear, 15 mm. long; glumes acute, 1-nerved, scabrous on the keels, otherwise glabrous, the first 5 mm., the second 6 mm. long; lemma acuminate, 8–9 mm. long, the awn 2–3 mm. long; palea much shorter than the lemma.

TYPE LOCALITY: Tamasopo Cañon, San Luis Potosí (*Pringle 3252*).

DISTRIBUTION: Limestone ledges, San Luis Potosí.

6. *Gouinia longiramea* Swallen, Publ. Carnegie Inst. Wash.

436: 334. 1934.

Culms erect, 1.5 meters tall, somewhat woody, glabrous; sheaths hairy on the collar, scaberulous, the lower shorter than the internodes, the upper overlapping; ligule membranaceous, erose, 1 mm. long; blades flat, acuminate, 25–35 cm. long, mostly 8–10 mm. wide, smooth except for the scabrous margins and a few hairs on both surfaces near the base; panicle 50 cm. long, the simple branches distant, drooping, mostly 20–30 cm. long; spikelets 10–15 mm. long, 4–5-flowered, 2–5 cm. distant, appressed to the branches, the pedicels 2–5 mm. long; glumes acute, the first 4–5 mm. long, 3–5-nerved, the second 6–7 cm. long, 5–7-nerved; lemma acuminate, 8–10 mm. long, 5–7-nerved, the awn slender, scabrous, 10–20 mm. long; palea equal to or a little shorter than the lemma, the teeth often mucronate, the margins pilose.

TYPE LOCALITY: Chichen Itzá, Yucatan (*Swallen 2385*).

DISTRIBUTION: Brushy borders, Yucatan Peninsula.

ILLUSTRATION: Publ. Carnegie Inst. Wash. 436: 334. f. 2.

7. *Gouinia guatemalensis* (Hack.) Swallen, Publ. Carnegie Inst.

Wash. 436: 334. 1934.

Diplachne guatemalensis Hack. Oesterr. Bot. Zeits. 52: 275. 1902.

Culms erect, about 90 cm. tall; sheaths overlapping, scabrous, papillose or papillose-pilose above; blades flat, 20–25 cm. long, 1.5 cm. wide, scabrous and sparsely pilose on both surfaces, papillose-pilose above near the base; ligule membranaceous, erose, less than 1 mm. long; panicle as much as 20 cm. long, the branches about 10 cm. long, naked below; spikelets 8–10 mm. long excluding the awns; glumes obtuse or subacute, mucronulate, scabrous, especially on the keel and toward the summit, the first 4–5 mm., the second 5–6 mm. long; lemma 7–8 mm. long, 3-nerved, bidentate, the awn about as long as the lemma; palea equal to the lemma, the margins glabrous.

TYPE LOCALITY: Guatemala (*Friedrichthal 1748*).

DISTRIBUTION: Mexico and Guatemala.

153. *LEPTOCHLOA* Beauv. Agrost. 71, 166. 1812.*Diplachne* Beauv. Agrost. 80. 1812. (Type species, *Festuca fascicularis* Lam.)*Rabdochloa* Beauv. Agrost. 84. 1812. (Type species, *Cynosurus domingensis* Jacq.)*Leptostachys* G. Meyer, Fl. Esseq. 73. 1818. (Type species, *L. virgata* (L.) G. Meyer.)*Oxydenia* Nutt. Gen. 1: 76. 1818. (Type species, *O. attenuata* Nutt.)*Diachroa* Nutt. Trans. Am. Phil. Soc. II. 5: 147. 1837. (Type species, *Festuca procumbens* Muhl.)*Ipnum* Philippi, Anal. Univ. Chile 36: 211. 1870. (Type species, *I. mendocinum* Philippi.)

Annual or perennial grasses with flat blades (involute in *L. monticola*) and numerous usually slender spikes, scattered along the common axis. Spikelets few to several flowered, the upper floret reduced to a small awnless rudiment, subsessile or short-pedicel, crowded or somewhat distant on one side of the slender rachis; glumes 1-nerved (or the second rarely 3-nerved), the second usually broader and longer than the first; lemmas 3-nerved, acute to obtuse, often 2-toothed or 2-lobed, awnless, mucronate, or awned, pubescent or pilose on the margins and sometimes on the internerves.

Type species, *Cynosurus virgatus* L.

Plants annual.

Sheaths sparsely pilose, rarely glabrous; lemmas 1–1.5 mm. long.

Sheaths glabrous or scabrous; lemmas 2–4 mm. long.

Lemmas awnless or mucronate.

Lemmas very abruptly obtuse or subacute, the margins nearly parallel; blades 1–4 mm. wide.

Lemmas gradually narrowed toward the summit; blades, at least some of them, more than 4 mm. wide.

Spikes curved or flexuous; lemmas 2 mm. long.

Spikes straight; lemmas 2.5–3 mm. long.

Culms rather hard, erect; spikelets 5–7-flowered, 4 mm. long.

Culms soft, succulent, erect or usually decumbent at the base and rooting at the lower nodes; spikelets 3–5-flowered, 4–5 mm. long.

Lemmas awned (awn sometimes very short in *L. fascicularis*).

Spikelets 3–5 mm. long; plants obscurely viscid.

Spikelets 8–10 mm. long; plants not at all viscid.

Plants perennial.

Spikes crowded at the summit of the culm, digitate or verticillate.

Spikes scattered in a usually elongate inflorescence.

Spikes slender, elongate, drooping.

Spikes evenly distributed on the axis, the lower ones 8–15 cm. long; lemmas 1.5–2 mm. long.

Lemmas awnless, or rarely short awned.

Lemmas awned.

Spikes in rather distant verticils, the lower ones 15–25 cm. long; lemmas 3 mm. long.

Spikes stiffly ascending or spreading, not drooping.

Lemmas 2–3 mm. long; blades rather soft, usually flat.

Inflorescence 20–45 cm. long, dense, the spikes narrowly ascending, not more than 6 cm. long; lemmas minutely lobed.

Inflorescence 8–20 cm. long, loose, the spikes ascending to spreading, the lower ones 8–10 cm. long; lemmas with two broad rounded lobes.

Lemmas 4–5 mm. long; blades firm, usually involute.

1. *L. filiformis*.2. *L. uninervia*.3. *L. scabra*.4. *L. panicoides*.5. *L. aqualica*.6. *L. viscida*.7. *L. fascicularis*.8. *L. chloridiformis*.9. *L. virgata*.10. *L. domingensis*.11. *L. longa*.12. *L. Nealleyi*.13. *L. dubia*.14. *L. monticola*.

1. *Leptochloa filiformis* (Lam.) Beauv. Agrost. 71, 161, 166. 1812.

- Festuca filiformis* Lam. Tab. Encyc. 1: 191. 1791. (Type from South America.)
Eleusine mucronata Michx. Fl. Bor. Am. 1: 65. 1803. (Type from Illinois, *Michaux*.)
Eleusine filiformis Pers. Syn. Pl. 1: 87. 1805. (Type from South America.)
 ?*Eleusine sparsa* Muhl. Descr. Gram. 135. 1817. (Type from Carolina or Georgia.)
Oxydenia attenuata Nutt. Gen. 1: 76. 1818. (Type from New Orleans, Louisiana [*Nuttall*].)
Leptostachys filiformis G. Meyer, Fl. Esseq. 74. 1818. (Based on *Eleusine filiformis* Pers.)
Leptochloa mucronata Kunth, Rév. Gram. 91. 1829. (Based on *Eleusine mucronata* Michx.)
Aira panicea Willd.; Steud. Nom. Bot. ed. 2. 1: 45. as synonym of *Leptochloa filiformis* Beauv. 1840.
Eleusine stricta Willd.; Steud. Nom. Bot. ed. 2. 1: 549, as synonym of *Leptochloa filiformis* Beauv. 1840. Not *E. stricta* Roxb., 1820.
Eleusine elongata Willd.; Steud. Nom. Bot. ed. 2. 1: 549, as synonym of *Leptochloa filiformis* Beauv. 1840.
Leptochloa brachiata Steud. Syn. Gram. 209. 1854. (Type from Guadeloupe, *Duchassaing*.)
Leptochloa attenuata Steud. Syn. Gram. 209. 1854. (Based on *Oxydenia attenuata* Nutt.)
Leptochloa pellucidula Steud. Syn. Gram. 209. 1854. (Type from Panama, *Duchassaing*.)
Leptochloa paniculata Fourn. Bull. Soc. Bot. Fr. 27: 296. 1880. (Type from Nicaragua, *Levy 1079*.)
Leptochloa mucronata pulchella Scribn. Bull. Torrey Club 9: 147. 1882. (Type from Santa Cruz Valley, Arizona, *Pringle* in 1881.)
Oxydenia filiformis Nutt.; B. D. Jackson, Ind. Kew. 2: 392, as synonym of *Leptochloa filiformis*. 1894.
Leptochloa pilosa Scribn. Circ. U. S. Dep. Agr. Agrost. 32: 9. 1901. (Type from Travis County, Texas, *Bodin 294* in 1891.)

Annual; culms slender to rather coarse, branching, erect or sometimes geniculate at the lower nodes, 10 cm. to more than a meter tall; sheaths sparsely papillose-pilose with long hairs, rarely glabrous; ligule membranaceous, subentire to lacerate-ciliate, 1-2 mm. long; blades flat, lax, 5-30 cm. long, 3-10 mm. wide, glabrous or sparsely papillose-pilose, the margins scabrous; inflorescence nearly half the length of the culm; spikes several to numerous, racemose on an elongated axis, lax, spreading to reflexed, 2-15 cm. long; spikelets 2-3-flowered, 1.5-2 mm. long, the upper floret scarcely exceeding the glumes; glumes acuminate, subequal; lemmas 1-1.5 mm. long, obtuse, minutely bilobed, awless, pubescent on the nerves and sometimes on the internerves toward the base.

TYPE LOCALITY: South America.

DISTRIBUTION: A weed in cultivated ground and waste places, Virginia to southern Indiana and eastern Kansas, and southward through the West Indies and tropical America to Argentina.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 219; Bull. U. S. Dep. Agr. 772: f. 101; Britt. & Brown, Ill. Fl. f. 417; ed. 2. f. 554; Hitchc. Man. f. 1014.

2. *Leptochloa uninervia* (Presl) Hitchc. & Chase, Contr. U. S.

Nat. Herb. 18: 383. 1917.

- Megastachya uninervia* Presl, Rel. Haenk. 1: 283. 1830.
Poa uninervia Kunth, Rév. Gram. Suppl. XXVIII. 1830. (Based on *Megastachya uninervia* Presl.)
Eragrostis uninervia Steud. Syn. Gram. 278. 1854. (Based on *Megastachya uninervia* Presl.)
Atropis carinata Griseb. Abh. Ges. Wiss. Gött. 24: 291. 1879. (Type from Argentina.)
Leptochloa imbricata Thurber, in S. Wats. Bot. Calif. 2: 293. 1880. (Type from San Diego County, California, *Palmer 404*.)
Diplachne imbricata Scribn. Bull. Torrey Club 10: 30. 1883. (Based on *Leptochloa imbricata* Thurber.)
Brizopyrum uninervium Fourn. Mex. Pl. Gram. 2: 121. 1886. (Based on *Megastachya uninervia* Presl.)
Leptochloa Virletii Fourn. Mex. Pl. Gram. 2: 147. 1886. (Type from San Luis Potosí, Mexico, *Virlet 1404*.)
Diplachne tarapacana Philippi, Anal. Mus. Nac. Chile 8: 88. 1891. (Type from Tarapacá, Chile.)
Rabdochloa imbricata Kuntze, Rev. Gen. 788. 1891. (Based on *Leptochloa imbricata* Thurber.)
Diplachne carinata Hack. Bol. Acad. Ci. Córdoba 16: 253. 1900. (Based on *Atropis carinata* Griseb.)
Diplachne uninervia L. Parodi, Univ. Nac. Buenos Aires Rev. Céntr. Estud. 18: 147. 1925. (Based on *Megastachya uninervia* Presl.)

Annual; culms erect, simple or sparingly branched, 30-100 cm. tall, glabrous; sheaths rounded on the back, glabrous or scabrous, shorter than the internodes; ligule membranaceous, 2-3 mm. long; blades firm, flat or loosely involute, attenuate scabrous, 10-45 cm. long, 1-4 mm. wide; panicle 10-30 cm. long; spikes numerous, approximate, stiffly ascending, the lower ones 4-9 cm. long, the upper ones gradually shorter and closer together; spikelets lead-colored, 6-9-flowered, 5-7 mm. long, appressed; first glume narrow, acute, 1-1.5 mm. long, the second much broader, abruptly acute or obtuse, mucronate; lemmas 2-3 mm. long, scarcely narrowed

toward the tip, abruptly subacute or obtuse, minutely lobed, apiculate, the lateral nerves more or less excurrent, the margins pilose near the base.

TYPE LOCALITY: Mexico (*Haenke*).

DISTRIBUTION: Swamps, wet ground, and wet roadside ditches, Mississippi to Colorado and California, and southward to British Honduras; introduced from Maine to New Jersey; West Indies; also from Peru and Brazil to Argentina.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12: *pl.* 42; Bull. U. S. Dep. Agr. Agrost. 7: *f.* 214; Hitchc. Man. *f.* 1019.

3. *Leptochloa scabra* Nees, Agrost. Bras. 435. 1829.

Leptochloa Langloisii Vasey, Bull. Torrey Club 12: 7. 1885. (Type from Louisiana, *Langlois*.)
Leptochloa Liebmanni Fourn. Mex. Pl. Gram. 2: 147. 1886. (Type from Antigua, Mexico, *Liebmann* 248.)

Annual; culms stout, erect, branching, usually more than a meter tall; sheaths glabrous or scaberulous, rounded on the back, usually shorter but sometimes longer than the internodes; ligule ciliate, 1–2 mm. long; blades flat, lax, 10–45 cm. long, 6–14 mm. wide, scabrous; inflorescence 20–35 cm. long; spikes numerous, crowded, flexuous, spreading, the lower mostly 6–8 cm. long, the upper one somewhat shorter; spikelets 3–4-flowered, 3–4 mm. long; glumes acute or acuminate, 1-nerved, the first 1 mm. long, the second 1.5 mm. long; lemmas 2 mm. long, acute or minutely lobed, mucronate, pilose on the lower half of the midnerve and margins.

TYPE LOCALITY: Pará, Brazil.

DISTRIBUTION: Swamps, Louisiana; Tabasco; West Indies, and southward to Peru and Brazil.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: *f.* 215; Hitchc. Man. *f.* 1022.

4. *Leptochloa panicoides* (Presl) Hitchc. Am. Jour. Bot.

21: 137. 1934.

Megastachya panicoides Presl, Rel. Haenk. 1: 283. 1830.

Poa panicoides Kunth, Rév. Gram. Suppl. XXVIII. 1830. (Based on *Megastachya panicoides* Presl.)

Eragrostis panicoides (Presl) Steud. Syn. Gram. 278. 1854. (Based on *Megastachya panicoides* Presl.)

Leptochloa floribunda Doll, in Mart. Fl. Bras. 2: 89. 1878. (Type from along the Amazon River between Manaus and Santarem, *Spruce*.)

Diplachne Halei Nash, Bull. N. Y. Bot. Gard. 1: 292. 1899. (Type from Louisiana, *Hale*.)

Leptochloa Halei Scribn. & Merr. Bull. U. S. Dep. Agr. Agrost. 24: 27. 1901. (Based on *Diplachne Halei* Nash.)

Annual; culms erect, branching, glabrous, 40 cm. to more than a meter tall; sheaths glabrous or scabrous, mostly longer than the internodes; ligule membranaceous, truncate, erose, 1–2 mm. long; blades flat, acuminate, 10–25 cm. long, 3–10 mm. wide, scabrous, especially on the margins; terminal inflorescence 12–30 cm. long, mostly 4–8 cm. wide, the numerous spreading spikes rather crowded, the lowermost as much as 8 cm. long (usually about 4 cm.); spikelets scarcely crowded, pedicellate, 5–7-flowered, about 4 mm. long; glumes acute or acuminate, the first narrow, 1-nerved, 1 mm. long, the second much broader, 1–3-nerved, 2 mm. long; lemmas 2.5–3 mm. long, densely pubescent on the margins near the base, the tip minutely lobed, mucronate.

TYPE LOCALITY: Acapulco, Mexico (*Haenke*).

DISTRIBUTION: Mud flats and lake shores, Indiana to Missouri, and southward to Mississippi and Texas; Sinaloa, Guerrero, and Tepic; also in Brazil.

ILLUSTRATIONS: Mart. Fl. Bras. 2: *pl.* 26; Hitchc. Man. *f.* 1023.

5. *Leptochloa aquatica* Scribn. & Merr. Bull. U. S. Dep. Agr.

Agrost. 24: 26. 1901.

Annual; culms erect, or decumbent at the base and rooting at the lower nodes, branching, 15–55 cm. long, glabrous; sheaths keeled, glabrous, mostly longer than the internodes; ligule 1 mm. long, truncate, minutely erose; blades flat, rather thin, 5–22 cm. long, 4–8 mm. wide, glabrous or scaberulous, the margins scabrous-serrate; inflorescence 5–18 cm. long, 2–3 cm. wide, with several to numerous ascending or appressed approximate spikes, the lower ones 2–6 cm. long; spikelets lead-colored, 3–5-flowered, 4–5 mm. long; glumes acute, scabrous, the

first 1 mm. long, the second broader, 2 mm. long; lemmas 3 mm. long, acute or subobtusely awnless, pubescent on the margins and along the midnerve in the lower half.

TYPE LOCALITY: Cuernavaca, Morelos (*Pringle 6664*).

DISTRIBUTION: Shallow water and along ditches, Morelos, Michoacán, and Jalisco.

6. *Leptochloa viscida* (Scribn.) Beal, Grasses N. Am. 2: 434. 1896.

Diplachne viscida Scribn. Bull. Torrey Club 10: 30. 1883.

Annual; culms in small to rather dense clumps, freely branching, erect or usually decumbent-spreading, 2-40 cm. tall; sheaths scabrous; ligule 1-3 mm. long, hyaline, minutely erose; blades flat, scabrous, 2-15 cm. long, 2-6 mm. wide; inflorescence included at the base, very short and dense with reduced spikes, or as much as 12 cm. long with numerous ascending spikes as much as 4 cm. long, 4-7-flowered; spikelets 3-5 mm. long; glumes acute, the first about 2 mm. long, the second broader, 2.5-3 mm. long; lemma 2-3 mm. long, pubescent on the nerves, the tip minutely lobed, awned from between the lobes, the awn about 1 mm. long.

TYPE LOCALITY: Tucson, Arizona (*Pringle in 1881*).

DISTRIBUTION: Wet places, on plains and along roads, Texas to California, Chihuahua, Sonora, and Baja California.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12: *pl. 45*; Hitchc. Man. *f. 1016*.

7. *Leptochloa fascicularis* (Lam.) A. Gray, Man. 588. 1848.

Festuca fascicularis Lam. Tab. Encyc. 1: 189. 1791.

Festuca polystachya Michx. Fl. Bor. Am. 1: 66. 1803. (Type from Illinois, *Michaux*.)

Diplachne fascicularis Beauv. Agrost. 81, 160. 1812. (Based on *Festuca fascicularis* Lam.)

Festuca procumbens Muhl. Descr. Gram. 160. 1817. (Type from Carolina.)

Festuca clandestina Muhl. Descr. Gram. 162. 1817. (Type from New York.)

Cynodon fascicularis Rasp. Ann. Sci. Nat. 5: 303. 1825. (Based on *Diplachne fascicularis* Beauv.)

Leptochloa polystachya Kunth, Rév. Gram. 91. 1829. (Based on *Festuca polystachya* Michx.)

Diachroa procumbens Nutt. Trans. Am. Phil. Soc. II. 5: 147. 1837. (Based on *Festuca procumbens* Muhl.)

Festuca texana Steud. Syn. Gram. 310. 1854. (Type from Texas, *Drummond 387*.)

Uralepsis composita Buckl. Proc. Acad. Phila. 1862: 94. 1862. (Type from New Mexico, *Woodhouse*.)

Diplachne patens Fourn.; Hemsl. Biol. Centr. Am. Bot. 3: 570, name only. 1885; Mex. Pl. Gram. 2: 148. 1886. (Type from Vera Cruz, Mexico, *Gouin 93*.) Not *D. patens* Desv. 1853.

Diplachne Tracyi Vasey, Bull. Torrey Club 15: 40. 1888. (Type from Reno, Nevada, *Tracy [216]*.)

Leptochloa Tracyi Beal, Grasses N. Am. 2: 436. 1896. (Based on *Diplachne Tracyi* Vasey.)

Festuca prostrata Muhl.; Scribn. & Merr. Circ. U. S. Dep. Agr. Agrost. 27: 5, as synonym of *F. procumbens* Muhl. 1900.

Diplachne procumbens Nash in Britton, Man. 128. 1901. (Based on *Festuca procumbens* Muhl.) Not *D. procumbens* ARech., 1896.

Diplachne acuminata Nash in Britton, Man. 128. 1901. (Type from Kansas, *Thompson*.)

Diplachne mariitima Bickn. Bull. Torrey Club 35: 195. 1908. (Based on *D. procumbens* Nash.)

Annual; culms erect or decumbent-spreading at the base, to more than 1 meter tall, simple or usually freely branching, especially in depauperate plants, glabrous; sheaths rounded on the back or keeled only near the summit, glabrous or scaberulous; ligule hyaline, lacerate, 3-5 mm. long; blades flat, scabrous, 10-50 cm. long, 1-5 mm. wide; inflorescence 15-30 cm. long (much reduced in depauperate plants); spikes numerous, approximate or rather distant, ascending or spreading, the lower ones 8-15 cm. long, becoming shorter upward; spikelets 8-10-flowered, 8-10 mm. long, appressed; glumes acuminate, the first narrow, 2.5-3 mm. long, the second broader, 3-4 mm. long; lemma 3-4 mm. long, abruptly acute, minutely notched, mucronate or aristate, densely pubescent on the margins and midnerve in the lower half.

TYPE LOCALITY: South America.

DISTRIBUTION: Wet ground and waste places, often in brackish marshes, New Hampshire to Florida and Texas; Illinois to South Dakota and Washington, and southward through tropical America to Argentina.

ILLUSTRATIONS: Beauv. Agrost. *pl. 16. f. 9*; Bull. U. S. Dep. Agr. Bot. 12: *pl. 41*; Bull. U. S. Dep. Agr. Agrost. 7: *f. 212*; Hitchc. Man. *f. 1017*.

8. *Leptochloa chloridiformis* (Hack.) L. Parodi, Physis
4: 184. 1918.

Diplachne chloridiformis Hack.; Stuck. Anal. Mus. Nac. Buenos Aires III. 6: 498. 1906.

Perennial; culms densely tufted, erect, as much as 1.5 meters tall, glabrous; sheaths rounded, glabrous or scabrous, usually longer than the internodes; ligule ciliate, 0.5–1 mm. long; blades firm, flat, attenuate, scabrous, as much as 40 cm. long, 3–5 mm. wide, sparsely pilose on the upper surface near the base; spikes 6–20, digitate or verticillate, ascending, becoming drooping, 12–18 cm. long; spikelets 3–5-flowered, mostly about 4 mm. long; glumes acute, scabrous, the first 2 mm. long, the second 3 mm. long; lemmas 3–4 mm. long, obtuse, minutely lobed, mucronate, the margins ciliate.

TYPE LOCALITY: Prov. Córdoba, Argentina (*Stuckert 2329*).

DISTRIBUTION: Dry roadsides and campos, Cameron County, Texas; also in Paraguay and Argentina.

ILLUSTRATIONS: Physis 4: 185. f. 5–6; Hitchc. Man. f. 1011.

9. *Leptochloa virgata* (L.) Beauv. Agrost. 71, 161, 166. 1812.

Cynosurus virgatus L. Syst. Nat. ed. 10. 2: 876. 1759.

Festuca virgata Lam. Tab. Encyc. 1: 189. 1791. (Based on *Cynosurus virgatus* L.)

Eleusine virgata Pers. Syn. Pl. 1: 87. 1805. (Based on *Cynosurus virgatus* L.)

Chloris poaeformis H.B.K. Nov. Gen. & Sp. 1: 169. 1816. (Localities cited, Colombia and Ecuador, Humboldt & Bonpland.)

Chloris digitaria H.B.K. Nov. Gen. & Sp. 1: 168. 1816. (Type from Peru, Humboldt & Bonpland.)

Leptostachys digitaria G. Meyer, Fl. Esseq. 74. 1818. (Based on *Chloris digitaria* H.B.K.)

Leptostachys virgata G. Meyer, Fl. Esseq. 74. 1818. (Based on *Cynosurus virgatus* Willd. [error for L.]

Leptochloa procera Nees, Syll. Pl. Nov. 1: 2. 1824. (Type from Brazil.)

Cynodon virgatus Rasp. Ann. Sci. Nat. 5: 302. 1825. (Based on *Leptochloa virgata* Beauv.)

Leptochloa digitaria Nees, Agrost. Bras. 433. 1829. (Based on *Chloris digitaria* H.B.K.)

Leptochloa procera var. *major* Brongn. in Duperrey, Bot. Coq. Voy. 2: 48. 1830.

Leptochloa procera var. *minor* Brongn. in Duperrey, Bot. Coq. Voy. 2: 48. 1830. (Type from Lima Peru.)

Leptochloa mutica Steud. Syn. Gram. 208. 1854. (Type from Surinam, Kappler 1553.)

Leptochloa virgata var. *aristata* Fourn. Mex. Pl. Gram. 2: 146. 1886. (Type from Mexico.)

Leptochloa virgata var. *intermedia* Fourn. Mex. Pl. Gram. 2: 146. 1886. (Type from Mexico, Liebmann 243, 251.)

Leptochloa perennis Hack. Inf. An. Estac. Centr. Agron. Cuba 1: 411. 1906. (Type from Cuba, Baker 4617.)

Perennial; culms tufted, erect or somewhat decumbent at the base, 30 cm. to more than a meter tall; sheaths rounded on the back, glabrous or nearly so; ligule 0.2–0.3 mm. long, minutely erose; blades flat, acuminate, 10–20 cm. long, 4–12 mm. wide, the margins scabrous; inflorescence drooping, 10–15 cm. long; spikes somewhat aggregate, slender, drooping, mostly 6–10 cm. long; spikelets 3–4-flowered, 2–3 mm. long; glumes similar, acute, the first 1.5 mm. long, the second a little longer; lemmas 1.5–2 mm. long, sparsely pilose on the margins, the tip blunt, often minutely lobed, awnless or rarely awned.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Open ground along streams and ditches, also in brushy places, Texas, Florida, and southward through the West Indies to Argentina.

ILLUSTRATIONS: Beauv. Agrost. pl. 15. f. 1; Hitchc. Man. f. 1012.

10. *Leptochloa domingensis* (Jacq.) Trin. Fund. Agrost.
133. 1820.

Cynosurus domingensis Jacq. Misc. Austr. 2: 363. 1781.

Festuca domingensis Lam. Tab. Encyc. 1: 189. 1791. (Based on *Cynosurus domingensis* Jacq.)

Eleusine domingensis Pers. Syn. Pl. 1: 87. 1805. (Based on *Cynosurus domingensis* Jacq.)

Rabdochloa domingensis Beauv. Agrost. 84, 176. 1812. (Based on *Cynosurus domingensis* Jacq.)

Chloris gracilis H.B.K. Nov. Gen. & Sp. 1: 168. 1816. (Type from Peru, Humboldt & Bonpland.)

Leptostachys domingensis G. Meyer, Fl. Esseq. 74. 1818. (Based on *Eleusine domingensis* Pers.)

Leptostachys gracilis G. Meyer, Fl. Esseq. 74. 1818. (Based on *Chloris gracilis* H.B.K.)

Leptochloa gracilis Nees, Syll. Pl. Nov. 1: 4. 1824. (Based on *Chloris gracilis* H.B.K.)

Eleusine gracilis Spreng. Syst. 1: 350. 1825. (Based on *Chloris gracilis* H.B.K.)

Cynodon domingense Rasp. Ann. Sci. Nat. 5: 302. 1825. (Based on *Rabdochloa domingensis* Beauv.)

Leptochloa virgata var. *domingensis* Link; Griseb. Fl. Brit. W. Ind. 538. 1864. (Based on *L. domingensis* Link [same as *L. domingensis* Trin.]

Diplachne domingensis Chapm. Fl. S. U. S. ed. 3. 609. 1897. (Based on *L. domingensis* Link [same as *L. domingensis* Trin].)

Leptochloa virgata var. *puberula* Hack. Repert. Nov. Sp. 6: 345. 1909. (Type from Paraguay, Rojas 94.)

Perennial; culms erect or ascending, 30 cm. to more than a meter tall, glabrous; sheaths glabrous or pilose, especially on the margins, densely pubescent on the collar, at least the lower ones compressed, keeled; ligule membranaceous, 0.2 mm. long, minutely ciliate; blades flat, acuminate, as much as 40 cm. long, 4-10 mm. wide, usually sparsely pilose, smooth or scabrous on the lower surface, scabrous on the upper; inflorescence 15-30 cm. long, drooping; spikes several to numerous, slender, drooping, the lower ones 4-15 cm. long, pilose in the axils; spikelets 4-5-flowered, not crowded; first glume acuminate, 1.5 mm. long, the second acute, 2 mm. long; lemmas 1.5-2 mm. long, subobtusely, sparsely pilose over the back, the slender awn 1-3 mm. long.

TYPE LOCALITY: Santo Domingo.

DISTRIBUTION: Open hillsides, cultivated fields, and waste places, Florida; eastern Mexico; West Indies, and southward to Argentina.

ILLUSTRATIONS: Beauv. Agrost. pl. 17. f. 3; Hitchc. Man. f. 1013.

11. *Leptochloa longa* Griseb. Fl. Brit. W. Ind. 538. 1864.

Perennial; culms erect from a decumbent base, sometimes rooting at the lower nodes, about 1.5 meters tall; sheaths rounded on the back, longer than the internodes, glabrous with a pubescent line across the back on the collar; ligule membranaceous, about 0.3 mm. long; blades flat, scabrous, acuminate, as much as 55 cm. long, 1.5-2.5 cm. wide, narrowed toward the base; inflorescence 15-25 cm. long, the slender spreading or drooping spikes in rather distant imperfect verticils, the lower ones 15-25 cm. long; spikelets usually 3-flowered, about 4 mm. long; glumes acuminate, the first 2 mm. long, the second 2.5-3 mm. long; lemmas 3 mm. long, pilose on the margins, with a slender awn 1.5-4 mm. long.

TYPE LOCALITY: Trinidad.

DISTRIBUTION: Rich shady banks, Trinidad.

12. *Leptochloa Nealleyi* Vasey, Bull. Torrey Club 12: 7. 1885.

Leptochloa stricta Fourn. Mex. Pl. Gram. 2: 147. 1886. (Type from Vera Cruz, Mexico, Gouin 73.)

Perennial; culms erect, rather coarse, solitary or in small clumps, flattened, as much as 120 cm. tall, glabrous; sheaths flattened, keeled, glabrous, mostly longer than the internodes; ligule membranaceous, obtuse, 2-3 mm. long; blades flat or becoming loosely rolled, conduplicate at the base, acuminate, scabrous, 15-45 cm. long, 3-10 mm. wide; inflorescence 20-45 cm. long, about 3 cm. wide; spikes numerous, ascending or appressed, arranged in somewhat distant dense fascicles, the lower ones as much as 6 cm. long, the upper ones successively shorter; spikelets crowded, 2-5-flowered, 1.8-3 mm. long; glumes obtuse, more or less erose, the first about 1 mm. long, the second a little longer; lemmas 1.5-2 mm. long, obtuse, minutely lobed, mucronate, pubescent on the midnerve and margins.

TYPE LOCALITY: Texas (*Nealley*).

DISTRIBUTION: Swampy ground and wet roadside ditches, Louisiana, Texas, Sinaloa, Vera Cruz, and Yucatan; Cuba.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 216; Hitchc. Man. f. 1021.

13. *Leptochloa dubia* (H.B.K.) Nees, Syll. Pl. Nov. 1: 4. 1824.

Chloris dubia H.B.K. Nov. Gen. & Sp. 1: 169. 1816.

Leptostachys dubia G. Meyer, Fl. Esseq. 74. 1818. (Based on *Chloris dubia* H.B.K.)

Festuca obtusiflora Willd.; Spreng. Syst. 1: 356. 1825. (Type from Mexico.)

Schismus patens Presl, Rel. Haenk. 1: 269. 1830. (Type from Chile, *Haenke*.)

Leptochloa patens Kunth, Rév. Gram. Suppl. XXII. 1830. (Based on *Schismus patens* Presl.)

Diplachne patens Desv. in C. Gay, Hist. Chile Bot. 6: 371. 1853. (Based on *Schismus patens* Presl.)

Uvalepis brevicuspidata Buckl. Proc. Acad. Phila. 1862: 93. 1862. (Type from Texas, *Wright 767*.)

Ipnium mendocinum Philippi, Anal. Univ. Chile 36: 211. 1870. (Type from Mendoza, Argentina.)

Diplachne dubia Scribn. Bull. Torrey Club 10: 30. 1883. (Based on *Leptochloa dubia* Nees.)

Leptochloa Pringlei Beal, Grasses N. Am. 2: 436. 1896. (Type from Arizona, *Pringle* in 1884.)

- Diplachne mendocina* Kurtz, Bol. Acad. Ci. Córdoba 15: 521. 1897. (Based on *Ipnium mendocinum* Philippi.)
Diplachne dubia var. *Humboldtiana* Kuntze, Rev. Gen. Pl. 3³: 349. 1898. (Type from Mexico.)
Diplachne dubia var. *Kurtziana* Kuntze, Rev. Gen. 3³: 349. 1898. (Type from Argentina, Kurtz 6647.)
Diplachne dubia var. *Pringleana* Kuntze, Rev. Gen. 3³: 349. 1898. (Type from Chihuahua, Mexico, Pringle 422.)
Leptochloa dubia var. *Pringleana* Scribn. & Merr. Bull. U. S. Dep. Agr. Agrost. 24: 27. 1901. (Based on *Diplachne dubia* var. *Pringleana* Kuntze.)
Rabdochloa dubia Kuntze; Stuck. Anal. Mus. Nac. Buenos Aires III. 4: 121. 1904. (Based on *Leptochloa dubia* Nees.)
Sieglingia dubia Kuntze; Stuck. Anal. Mus. Nac. Buenos Aires III. 4: 128. 1904. (Based on *Chloris dubia* H.B.K.)
Eragrostis mendocina Jedw. Bot. Archiv. 5: 192. 1924. (Based on *Ipnium mendocinum* Philippi.)

Perennial; culms in dense, rather tough clumps, erect, simple or branching, 40 cm. to more than a meter tall, glabrous; sheaths mostly shorter than the internodes, glabrous, or sparsely pilose on the margins, at least the lower ones keeled, the upper ones rounded on the back; ligule 1 mm. long, minutely lacerate; blades flat, 10–25 cm. long (or the uppermost shorter), 2–6 mm. wide, scabrous, often pilose on the upper surface near the base; inflorescence 8–20 cm. long, with several ascending to spreading, scattered spikes, the lower ones 8–10 cm. long; spikelets 4–10-flowered, the florets spreading; glumes acuminate, the first 3 mm. long, the second a little broader, 3.5–4 mm. long; lemma 3 mm. long, awnless, minutely pubescent on the margins, sparsely pilose on the internodes, the tip with two broad rounded lobes.

TYPE LOCALITY: Mexico (*Humboldt & Bonpland*).

DISTRIBUTION: Dry rocky hills and open ground, southern Florida; Oklahoma and Texas to Arizona, and southward through Mexico; also in Argentina.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 217, 218; Hitchc. Man. f. 1009.

14. *Leptochloa monticola* Chase, Jour. Wash. Acad. 17: 73. 1927.

Perennial; culms densely tufted, erect, 50 cm. to more than a meter tall; sheaths rounded on the back, glabrous, the lower ones crowded, the upper elongate but shorter than the internodes; ligule membranaceous, minutely erose, less than 0.5 mm. long; blades firm, twisted at the base, involute or sometimes flat, 20–30 cm. long, 2–6 mm. wide, glabrous on the lower surface, scabrous and sparsely pilose on the upper; inflorescence 20–40 cm. long, the numerous ascending spikes subverticillate, the lower ones 7–10 cm. long; spikelets scarcely crowded, 6-flowered or 7-flowered, 8–10 mm. long; glumes acuminate, the first 2 mm. long, the second broader, 3 mm. long; lemmas 4–5 mm. long, densely pilose on the margins at the base and on the lower part of the midnerve.

TYPE LOCALITY: Furcy, Haiti (*Leonard 4751*).

DISTRIBUTION: Pineland, on steep slopes at 1300–1500 meters altitude, Haiti.

ILLUSTRATIONS: Jour. Wash. Acad. 17: 73. f. 2; Misc. Publ. U. S. Dep. Agr. 243: f. 67.

154. *TRICHONEURA* Anderss. Sv. Vet. Akad. Handl. 1853: 148. 1855.

Annual or perennial grasses with firm flat blades and simple panicles, the spikelets short-pedicel on one side of the comparatively short stiff spreading racemose spikes. Spikelets few-flowered to several-flowered, the rachilla hairy, disarticulating above the glumes and between the florets, the joints oblique, the upper part of the internodes thus forming short rounded calluses below the florets; glumes 1-nerved, long-acuminate, nearly as long as the spikelet; lemmas 3-nerved, the margins ciliate, short-awned from between the teeth of the minutely bifid apex; palea nearly as long as the lemma, the nerves marginal.

Type species, *Trichoneura Hookeri* Anderss.

1. *Trichoneura elegans* Swallen, Am. Jour. Bot. 19: 439. 1932.

Annual; culms rather stout, erect, branching, 35–110 cm. tall, strigose below the panicles; sheaths longer than the internodes, keeled, papillose, scabrous; blades firm, flat or loosely rolled, 5–25 cm. long, 2–7 mm. wide, narrower at the base than the summit of the sheath,

scabrous on both surfaces; ligule 2 mm. long, membranaceous, truncate; panicles finally exerted, 5-18 cm. long, 2-5 cm. wide at maturity, densely flowered; spikes 15-20, fewer in depauperate specimens, approximate, narrowly ascending to somewhat spreading, the lower as much as 8 cm. long; spikelets 9-10 mm. long, 5-8-flowered, the lowest floret sterile; glumes as long as the florets, 1-nerved, acuminate or awn-pointed, scabrous; lower lemmas 5.5 mm. long, the others gradually shorter, scaberulous, conspicuously ciliate on the lower half to two thirds of the margins, the awns not more than 0.5 mm. long; palea acute, 2-toothed, a little shorter than the lemma, scabrous; rachilla-joint densely bearded at the base.

TYPE LOCALITY: Devine, Texas (*Silveus 343*).

DISTRIBUTION: Sandy land, southeastern Texas.

ILLUSTRATIONS: Am. Jour. Bot. 19: 440. f. 4; Hitchc. Man. f. 1025.

155. BOUTELOUA Lag. Var. Ci. 4: 134. 1805.

Atheropogon Muhl.; Willd. Sp. Pl. 4: 937. 1806. (Type species, *A. apludoides* Muhl.)

Triathera Desv. Nouv. Bull. Soc. Philom. 2: 188. 1810. (Type species, *Aristida americana* L.)

Heterosteca Desv. Nouv. Bull. Soc. Philom. 2: 188. 1810. (Type species, *H. juncifolia* Desv.)

Chondrosium Desv. Nouv. Bull. Soc. Philom. 2: 188. 1810. (Type species, *Chloris procumbens* Durand.)

Polyodon H.B.K. Nov. Gen. & Sp. 1: 174. 1816. (Type species, *P. distichum* H.B.K.)

Triana H.B.K. Nov. Gen. & Sp. 1: 178. 1816. (Type species, *T. racemosa* H.B.K.)

Actinochloa Willd.; R. & S. Syst. Veg. 2: 22, 417. 1817. (Type species, *Chondrosium procumbens* Desv.)

Eutriana Trin. Fund. Agrost. 161. 1820. (Type species, *E. curtispindula* Trin.)

Erucaria Cerv. Naturaleza 1: 347. 1870. (Type species, *E. glandulosa*, the first described.)

Annual or perennial usually tufted grasses with slender culms and one to many short 1-sided spikes solitary or racemose on a short or often elongated axis. Spikelets one to many in each spike, with one fertile floret and one or two rudimentary florets above it, the second floret often staminate and sometimes perfect; glumes 1-nerved (3-5-nerved in *B. nervata*), the first narrow, the second much broader, twice as long as the first, or both broad, similar and subequal; fertile lemma 3-nerved, glabrous or bearded at the base, glabrous or pilose on the margins and sometimes pilose across the back, the tip variously lobed or dentate, the nerves usually excurrent in short awns; rudiment reduced to 3 (rarely to 1) awns or glumaceous, lobed or dentate with 3 usually conspicuous awns; third floret sometimes present, but very much reduced.

Type species, *Bouteloua racemosa* Lag.

Spikes persistent; spikelets pectinate.

Plants annual.

Spike 1.

Spikes 4-7.

Second glume papillose-hispid on the keel; rachis papillose-hispid-ciliate.

Second glume scabrous on the keel; rachis not ciliate.

Plants perennial.

Rachis produced beyond the spikelets, pointed; second glume tuberculate-hispid.

Culms glabrous.

Culms retrorsely hirsute below the nodes.

Rachis terminating in a spikelet, this often rudimentary; second glume glabrous, scabrous or pubescent (sparsely papillose-pilose in *B. gracilis*).

Spike solitary.

Spikes normally 2, rarely 1 or 3.

Blades firm, pungent, curved; second glume glabrous.

Blades soft, flexuous, attenuate; second glume sparsely papillose-pilose on the keel.

Spikes 3-8.

Culms felty-pubescent.

Culms glabrous.

Plants stoloniferous.

Plants not stoloniferous.

Culms erect from a hard rhizomatous base.

Culms erect or geniculate at the base, this soft and the plant often appearing like an annual.

Culms branching; awns of fertile lemma 2-3 mm. long.

Culms simple; awns of fertile lemma about 5 mm. long.

1. *B. simplex*.

2. *B. Parryi*.

3. *B. barbata*.

4. *B. hirsuta*.

5. *B. glandulosa*.

6. *B. scorpioides*.

7. *B. breviflata*.

8. *B. gracilis*.

9. *B. eriopoda*.

10. *B. sonorae*.

11. *B. Karwinskii*.

12. *B. Rothrockii*.

13. *B. trifida*.

Spikes deciduous; spikelets not pectinate.

Plants annual.

Sheaths and blades sparsely to densely papillose-pilose or papillose-hispid.

Spikes 4-9.

Spikes 10-25.

Sheaths and blades glabrous, scabrous or pubescent.

Spikes narrow, abruptly spreading above, the rachis sharp-pointed at the base; spikelets appressed.

Spikes broad, usually ascending, the rachis not sharp-pointed at the base; spikelets spreading.

Plants perennial.

Spikes 1 or 2.

Second glume 1-nerved.

Second glume prominently 3-5-nerved.

Spikes 3-50.

Spikes fewer than 15.

Second glume hairy.

Spikes 3-8, rhomboid, the margins of the rachis densely ciliate; spikelets obscurely pectinate.

Spikes 10-13, triangular, the margins of the rachis not conspicuously ciliate; spikelets not pectinate.

Second glume glabrous or scabrous, sometimes hispid on the keel but not hairy over the back.

Blades involute, filiform, glabrous.

Blades flat, if more or less involute not filiform.

Spikes with 1 spikelet.

Rudiment with 1 awn about equaling the fertile floret.

Rudiment with 3 awns 5-10 mm. long.

Spikes with 2 or more spikelets.

First glume narrow, almost subulate, the second much longer and broader.

First and second glumes similar, subequal.

Glumes 4-5 mm. long, glabrous or scabrous on the keel; culms widely spreading.

Spikes linear, 1-4 cm. long; rudiment reduced to 3 slender awns.

Spikes broader, not more than 1.5 cm. long, the spikelets somewhat spreading.

Glumes 5-9 mm. long, usually hispid on the keel; culms erect or ascending.

Base of the plants hard and rhizomatous; sheaths usually broad and conspicuous.

Base of the plants comparatively soft, not rhizomatous; sheaths inconspicuous.

Sheaths and blades glabrous or sparsely pilose.

Lemma of the upper floret deeply cleft.

Lemma of the upper floret minutely dentate.

Sheaths and blades velvety pubescent.

Spikes 15-50, usually more than 20.

Ligule membranaceous, more or less erose.

Sheaths densely papillose-pilose toward the summit.

Sheaths glabrous.

Spikelets crowded; rudimentary floret well developed.

Spikelets not crowded; rudimentary floret wanting or reduced to a single awn as long as the fertile floret.

Ligule ciliate.

Spikes with only one spikelet.

Rudiment about 2 mm. long, the awns 6-10 mm. long.

Rudiment wanting or reduced to a short bristle.

Spikes with two or more spikelets.

14. *B. alamosana*.

15. *B. disticha*.

16. *B. aristoides*.

17. *B. annua*.

18. *B. stolonifera*.

19. *B. nervata*.

20. *B. chondrosioides*.

21. *B. eludens*.

22. *B. Vaneedenii*.

23. *B. pedicellata*.

24. *B. juncea*.

25. *B. rigidiseta*.

26. *B. americana*.

27. *B. Heterostega*.

28. *B. radicata*.

29. *B. repens*.

30. *B. filiformis*.

31. *B. pubescens*.

32. *B. Pringlei*.

33. *B. latifolia*.

34. *B. reflexa*.

35. *B. Triaena*.

36. *B. uniflora*.

37. *B. curtispindula*.

1. *Bouteloua simplex* Lag. Var. Ci. 4: 141. 1805.

Chloris procumbens P. Durand, Chlor. Sp. 16. 1808. (Type grown at Madrid, the source unknown.)

Chloris filiformis Poir. in Lam. Encyc. Suppl. 2: 237. 1811. (Type grown at Paris, the source unknown.)

Chondrosium procumbens Desv.; Beauv. Agrost. 41, 158. 1812. (Based on *Chloris procumbens* P. Durand.)

Atheropogon procumbens Jacq. f. Eclog. Gram. 16. 1813. (Based on *Chloris procumbens* Durand.)

Bouteloua prostrata Lag. Var. Ci. 4: 141, nomen seminudum. 1805; Lag. Gen. & Sp. Nov. 5. 1816. (Type from Mexico.)

Chondrosium humile H.B.K. Nov. Gen. & Sp. 1: 175. 1816. (Type from Ecuador, Humboldt & Bonpland.)

- Chondrosium tenue* Beauv.; H.B.K. Nov. Gen. & Sp. 1: 176. 1816. (Type from Mexico, *Humboldt & Bonpland*.)
- Chloris tenuis* Poir. in Lam. Encyc. Suppl. 5: 614. 1817. (Based on *C. filiformis* Poir., p. 237, not *C. filiformis* Poir. op. cit. 238.)
- Actinochloa procumbens* R. & S. Syst. Veg. 2: 417. 1817. (Based on *Chloris procumbens* Durand.)
- Actinochloa humilis* Willd.; R. & S. Syst. Veg. 2: 417. 1817. (Based on *Chondrosium humile* H.B.K.)
- Actinochloa simplex* R. & S. Syst. Veg. 2: 418. 1817. (Based on *Bouteloua simplex* Lag.)
- Actinochloa tenuis* Willd.; R. & S. Syst. Veg. 2: 418. 1817. (Based on *Chondrosium tenue* H.B.K.)
- Actinochloa prostrata* R. & S. Syst. Veg. 2: 419. 1817. (Based on *Bouteloua prostrata* Lag.)
- Eutriana humilis* Trin. Gram. Unifl. 239. 1824. (Based on *Actinochloa humilis* Willd.)
- Eutriana tenuis* Trin. Gram. Unifl. 240. 1824. (Based on *Actinochloa tenuis* Willd.)
- Atheropogon humilis* Spreng. Syst. 1: 293. 1825. (Based on *Chondrosium humile* H.B.K.)
- Cynodon procumbens* Rasp. Ann. Sci. Nat. 5: 303. 1825. (Based on *Chondrosium procumbens* Desv.)
- Chondrosium prostratum* Sweet, Hort. Brit. 1: 455. 1826. (Based on *Bouteloua prostrata* Lag.)
- Chondrosium simplex* Kunth, Rév. Gram. 94. 1829. (Based on *Bouteloua simplex* Lag.)
- Erucaria lutescens* Cerv. Naturaleza 1: 349. 1870. (Type from Mexico.)
- Bouteloua tenuis* Griseb. Abh. Ges. Wiss. Gött. 19: 211. 1874. (Based on *Chondrosium tenue* Beauv.)
- Bouteloua humilis* Hieron. Bol. Acad. Ci. Córdoba 4: 495. 1882. (Based on *Chondrosium humile* Beauv.)
- Bouteloua pusilla* Vasey, Bull. Torrey Club 11: 6. 1884. (Type from Kingman, New Mexico, Vasey.)
- Bouteloua brachyathera* Philippi, Anal. Mus. Nac. Chile Bot. 8: 85. 1891. (Type from Tarapacá, Chile.)
- Bouteloua Rahmeri* Philippi, Anal. Mus. Nac. Chile Bot. 8: 85. 1891. (Type from Tarapacá, Chile.)
- Bouteloua procumbens* D. Griff. Contr. U. S. Nat. Herb. 14: 364. 1912. (Based on *Chloris procumbens* Durand.)
- Bouteloua simplex* var. *Rahmeri* Henrard, Meded. Rijks Herb. Leiden 40: 66. 1921. (Based on *B. Rahmeri* Philippi.)

Annual; culms slender, branching, decumbent-spreading, mostly 10–20 cm. (rarely to 30 cm.) tall; sheaths shorter than the internodes, glabrous; blades flat, acuminate, 2–10 cm. long, 0.5–1.5 mm. wide, glabrous, or pubescent on the upper surfaces, the margins sparsely ciliate at the base; spike solitary, ascending or spreading, curved, 1–2.5 cm. long; spikelets pectinate; first glume rather narrow, 2.5 mm. long, the second broader, acuminate, about 5 mm. long; lemma 4 mm. long, acute, bearded at the base, appressed-pilose on both sides of the midnerve, the tip bifid, the awn strong, scabrous; 1.5–2.5 mm. long; rudiment bearded at the base, cleft nearly to the base, the awns strong, scabrous, 4–5 mm. long.

TYPE LOCALITY: Peru.

DISTRIBUTION: Rocky hills, dry open ground and waste places, Texas, Colorado, Utah, Arizona, and Mexico; also from Peru to Argentina.

ILLUSTRATIONS: H.B.K. Nov. Gen. & Sp. 1: pl. 56; pl. 57; Bull. U. S. Dep. Agr. Bot. 12: pl. 42; Bull. U. S. Dep. Agr. Agrost. 17: f. 501; Hitchc. Man. f. 1090.

2. *Bouteloua Parryi* (Fourn.) D. Griff. Contr. U. S. Nat. Herb. 14: 381. 1912.

Bouteloua polystachya var. *vestita* S. Wats. Proc. Am. Acad. 18: 177. 1883. (Type from Sierra Madre south of Saltillo, Mexico, *Palmer 1357* in 1880.)

Chondrosium Parryi Fourn. Mex. Pl. Gram. 2: 150. 1886.

Bouteloua vestita Scribn.; L. Dewey, Contr. U. S. Nat. Herb. 2: 531. 1894. (Based on *B. polystachya* var. *vestita* S. Wats.)

Annual; culms erect, or usually geniculate at the lower nodes, 15–60 cm. (usually 30–40 cm.) tall, freely branched; sheaths shorter than the internodes, glabrous or sparsely pilose or papillose-pilose; blades flat, 4–15 cm. (usually less than 10 cm.) long, 1–3 mm. wide, usually pilose, the margins sparsely papillose-pilose; spikes 4–7, fewer on the branches, ascending or spreading, straight or flexuous, 1–3.5 cm. long, the peduncle papillose-hispid, the margins papillose-hispid-ciliate; first glume acute, hyaline, glabrous, about 2.5 mm. long, the second broader, 3 mm. long, papillose-hispid on the nerve, with an awn 2 mm. long; lemma 3 mm. long, villous over the lower half of the back, the awns about 3 mm. long; rudiment about 2 mm. long, bearded at the base, the lobes obtuse, the awns 3–4 mm. long, usually with a second much reduced club-shaped, awnless floret.

TYPE LOCALITY: San Luis Potosí (*Parry & Palmer 943½*).

DISTRIBUTION: Mesas and rocky hills, southern Texas, New Mexico, Arizona, and northern Mexico.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 202; Hitchc. Man. f. 1094.

3. *Bouteloua barbata* Lag. Var. Ci. 4: 141. 1805.

- Actinochloa barbata* R. & S. Syst. Veg. 2: 420. 1817. (Based on *Bouteloua barbata* Lag.)
Euriana barbata Kunth, Rév. Gram. 96. 1829. (Based on *Bouteloua barbata* Lag.)
Chondrosium polystachyum Benth. Bot. Voy. Sulph. 56. 1844. (Type from Magdalena Bay, Baja California, Barclay.)
Chondrosium subscorpioides C. Müll. Bot. Zeit. 14: 347. 1856. (Type from Baja California, Barclay.)
Bouteloua polystachya Torr. Pacif. R. R. Rep. 5: 366. 1856. (Based on *Chondrosium polystachyum* Benth.)
Bouteloua pumila Buckl. Proc. Acad. Phila. 1862: 93. 1862. (Type from Texas, Wright 754.)
Erucaria tetrastachya Cerv. Naturaleza 1: 349. 1870. (Type from Mexico.)
Bouteloua polystachya var. (?) *major* Vasey, in Rothr. Bot. Wheeler's Surv. 287. 1878. (Type locality, Sanoita Valley, Arizona, Rothrock 691.)
Chondrosium exile Fourn. Mex. Pl. Gram. 2: 137. 1886. (Type from Mexico, Berlandier 842.)
Chondrosium microstachyum Fourn. Mex. Pl. Gram. 2: 138. 1886. (Type from Guadalupe, Mexico, Bourgeau 667.)
Bouteloua arenosa Vasey, in S. Wats. Proc. Am. Acad. 24: 81, name only. 1889; Bull. U. S. Dep. Agr. Bot. 12: no. 34. 1890. (Type from Guaymas, Mexico, Palmer 189.)
Bouteloua microstachya L. Dewey, Contr. U. S. Nat. Herb. 2: 531. 1894. (Based on *Chondrosium microstachyum* Fourn.)
Bouteloua micrantha Scribn. & Merr. Circ. U. S. Dep. Agr. Agrost. 32: 8. 1901. (Type from Fort Lowell, Arizona, Griffiths 1556.)

Annual; culms slender, branching, geniculate, decumbent-spreading, mostly 10–30 cm. tall; sheaths glabrous, shorter than the internodes; ligule ciliate, nearly 1 mm. long; blades flat, acuminate, 1–6 cm. long, 1–2 mm. wide, scabrous above, glabrous below; spikes 4–6 (sometimes only 3), 1–3 cm. long, ascending to spreading; first glume hyaline, acuminate, 1.5–2 mm. long, the second acute or acuminate, sometimes subobtusate and mucronate, 2–3 mm. long, scabrous; lemma 2–4 mm. long, densely villous at least on the margins, and often over the entire back, the awns from shorter than the lobes to 3 mm. long; rudiment more or less bearded at the base, deeply cleft, the lobes obtuse, the awns about as long as those of the lemma.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Open ground, rocky hills, and waste places, Texas to southern Utah and southern California; Mexico.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12: pl. 34; Bull. U. S. Dep. Agr. Agrost. 17: f. 500; Hitchc. Man. f. 1092.

4. *Bouteloua hirsuta* Lag. Var. Ci. 4: 141. 1805.

- Chondrosium hirtum* H.B.K. Nov. Gen. & Sp. 1: 176. 1816. (Type locality, Mexico, Humboldt & Bonpland.)
Actinochloa hirsuta R. & S. Syst. Veg. 2: 419. 1817. (Based on *Bouteloua hirsuta* Lag.)
Euriana hirta Trin. Gram. Unifil. 240. 1824. (Based on *Actinochloa hirsuta* R. & S.)
Atheropogon hirtus Spreng. Syst. 1: 293. 1825. (Based on *Chondrosium hirtum* H.B.K.)
Chondrosium hirsutum Sweet, Hort. Brit. 1: 455. 1826. (Presumably based on *Actinochloa hirsuta* R. & S.)
Atheropogon papillosus Engelm. Am. Jour. Sci. 46: 104. 1843. (Type from Beardstown, Illinois, Geyer.)
Chondrosium Aschenbornianum Nees, Linnaea 19: 692. 1847. (Type from Mexico, Aschenborn 331.)
Chondrosium foeneum Torr. in Emory, Notes Mil. Rec. 154. 1848. (Type from valley of the Del Norte, [New Mexico, Emory Exped.])
Chondrosium papillosum Torr. in Marcy, Expl. 300. 1853. (Based on *Atheropogon papillosus* Engelm.)
Erucaria hirsuta Cerv. Naturaleza 1: 348. 1870. (Type from Mexico.)
Erucaria longifolia Cerv. Naturaleza 1: 350. 1870. (Type from Mexico.)
Bouteloua foenea Torr. in Wats. & Rothr. Cat. Pl. Wheeler's Surv. 18. 1874. (Based on *Chondrosium foeneum* Torr.)
Chondrosium Drummondii Fourn. Mex. Pl. Gram. 2: 137. 1886. (Type from Texas, Drummond 323.)
Bouteloua Palmeri Vasey, Bull. Torrey Club 14: 9, name only. 1887. Later described as *B. hirsuta* var. *Palmeri* Vasey.
Bouteloua hirsuta var. *minor* Vasey, Bull. U. S. Dep. Agr. Bot. 12: no. 39, nomen seminudum. 1890. (Type from Texas, Reverchon 1153.)
Bouteloua hirsuta var. *major* Vasey, Bull. U. S. Dep. Agr. Bot. 12: no. 39, nomen seminudum. 1890. (Type from Austin, Texas, Stiles in 1884.)
Bouteloua hirta Scribn. Contr. U. S. Nat. Herb. 2: 531. 1894. (Based on *Chondrosium hirtum* H.B.K.)
Bouteloua hirta var. *major* Vasey; L. Dewey, Contr. U. S. Nat. Herb. 2: 531. 1894. (Localities cited, Western Texas to Mexico.)
Bouteloua hirta var. *minor* Vasey; L. Dewey, Contr. U. S. Nat. Herb. 2: 531. 1894. (Type from Central Texas.)

Bouteloua hirsuta var. *Palmeri* Vasey; Beal, Grasses N. Am. 2: 417. 1896. (Type cultivated, seed collected by Palmer in Mexico.)

Bouteloua pectinata Featherly, Bot. Gaz. 91: 103. 1931. (Type from Oklahoma, *English 71*.)

Perennial; culms tufted, erect, 20–60 cm. tall, scaberulous; sheaths glabrous or scaberulous, more or less papillose-hispid at the throat; blades firm, flat, acuminate, 5–15 cm. long, 1–3 mm. wide, sparsely papillose-ciliate; spikes 1–3 (usually 2), mostly 2–4 cm. long, rarely shorter, ascending or spreading, the rachis prolonged beyond the spikelets in a stiff point; first glume narrow, acuminate, hyaline, about 2.5 mm. long, the second broader, acuminate, awn-pointed, pubescent, prominently tuberculate-hispid on the keel; lemma 5 mm. long, sparsely bearded at the base, pilose on the margins and on the lower part of the midnerve, 3-lobed, the lobes mucronate, the middle one somewhat longer than the lateral ones; rudiment glabrous or sometimes shortly bearded at the base, deeply cleft, the awns 2–4 mm. long, with broad scales between them.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Dry prairies, mesas, rocky slopes, and open ground, Florida; Wisconsin to North Dakota, and southward to Louisiana and southern California; Mexico.

ILLUSTRATIONS: H.B.K. Nov. Gen. & Sp. 1: pl. 59; Emory, Notes Mil. Rec. pl. 12; Bull. U. S. Dep. Agr. Bot. 12¹: pl. 39; Bull. U. S. Dep. Agr. Agrost. 7: f. 205; Contr. U. S. Nat. Herb. 14²: f. 34; Bot. Gaz. 91: 104. f. 1–4; Britt. & Brown, Ill. Fl. f. 411; ed. 2. f. 548; Hitchc. Man. f. 1096.

5. *Bouteloua glandulosa* (Cerv.) Swallen, comb. nov.

Erucaria glandulosa Cerv. *Naturaleza* 1: 347. 1870.

Bouteloua hirticulmis Scribn. Circ. U. S. Dep. Agr. Agrost. 30: 4. 1901. (Type from Sierra de San Francisquito mountains, Baja California, Mexico, *Brandege 11*.)

Perennial; very similar in habit and appearance to *B. hirsuta*, differing mostly in its conspicuously papillose-hirsute culms; awns of the rudiment somewhat longer than in *B. hirsuta* and the spike therefore more bristly.

TYPE LOCALITY: "Guadalupe et Moctezuma," Mexico.

DISTRIBUTION: Sterile rocky hills, prairies, and open ground, Mexico.

ILLUSTRATION: Contr. U. S. Nat. Herb. 14²: f. 33.

6. *Bouteloua scorpioides* Lag. Gen. & Sp. Nov. 5. 1816.

Actinochloa? scorpioides R. & S. Syst. Veg. 2: 420. 1817. (Based on *Bouteloua scorpioides* Lag.)

Atheropogon scorpioides Spreng. Syst. 1: 293. 1825. (Based on *Bouteloua scorpioides* Lag.)

Chondrosium? scorpioides Kunth. Rév. Gram. 94. 1829. (Based on *Bouteloua scorpioides* Lag.)

?*Erucaria monostachia* Cerv. *Naturaleza* 1: 349. 1870.

Perennial; culms in small dense clumps, erect, 10–30 cm. tall, glabrous; sheaths glabrous, overlapping, usually with a conspicuous tuft of hairs at the throat; ligule ciliate, about 0.5 mm. long; blades involute, filiform, recurved or flexuous, glabrous; spike solitary, suberect to spreading, straight to arcuate, as much as 5 cm. long; spikelets pectinate, crowded; glumes subacute, glabrous, the first narrow, 2–3 mm. long, the second broader, 4–7 mm. long; fertile lemma 4–5 mm. long, bearded at the base, densely pilose on the margins and both sides of the midnerves in the lower half, the awns stout, somewhat flattened, the lateral ones (including the narrow lobes) about 2 mm. long, the central one about 1.5 mm. long; rudiment bearded at the base, the awns 4–4.5 mm. long, the intermediate lobes small, obtuse.

TYPE LOCALITY: Mexico.

DISTRIBUTION: Rocky hills and plains, central Mexico.

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 14²: f. 31, 32.

7. *Bouteloua breviseta* Vasey, Contr. U. S. Nat. Herb. 1: 58. 1890.

Bouteloua ramosa Scribn.; Vasey, Bull. U. S. Dep. Agr. Bot. 12¹: pl. 44. 1890. (Type from Santa Eulalia mountains, Chihuahua, Mexico, *Wilkinson*.)

Bouteloua oligostachya var. *ramosa* Scribn.; Beal, Grasses N. Am. 2: 418. 1896. (Based on *B. ramosa* Scribn.)

Perennial; culms in small hard clumps from a knotty base, stiff, wiry, branching, erect or spreading, often geniculate at the nodes, 20–50 cm. tall, glabrous, the nodes pubescent; sheaths glabrous, the margins ciliate, more or less pilose in the throat; ligule ciliate, about

0.5 mm. long; blades firm, stiff, pungently pointed, loosely involute, curved, spreading, 1.5-7 cm. long, 1-1.5 mm. wide, glabrous; spikes 1-3, 1-3.5 cm. long, somewhat curved, ascending or spreading; first glume very narrow, acuminate, 2 mm. long; second glume broader, acute, 3 mm. long, glabrous; lemma 4 mm. long, shortly bearded at the base, pilose over the entire back, the tip minutely bifid, the central awn about 1 mm. long, the lateral ones a little longer; rudiment long-bearded at the base, rather deeply cleft, the awns 3-4 mm. long, a second awnless cucullate rudiment developed.

TYPE LOCALITY: Presidio County, Texas (*Nealley 669*).

DISTRIBUTION: Dry prairies and rocky hills, western Texas, New Mexico, and northern Mexico.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12: *pl. 44*; Bull. U. S. Dep. Agr. Agrost. 7: *f. 200*; *f. 201*; Hitchc. Man. *f. 1100*.

8. *Bouteloua gracilis* (H.B.K.) Lag.; Steud. Nom. Bot. ed. 2.
1: 219. 1840.

Chondrosium gracile H.B.K. Nov. Gen. & Sp. 1: 176. 1816. (Type from Mexico, *Humboldt & Bonpland*.)

Actinochloa gracilis Willd.; R. & S. Syst. Veg. 2: 418. 1817. (Based on *Chondrosium gracile* H.B.K.)

Atheropogon oligostachyus Nutt. Gen. 1: 78. 1818. (Type from plains of the upper Missouri [*Nuttall*].)

Eutriana gracilis Trin. Gram. Unif. 240. 1824. (Based on *Actinochloa gracilis* Willd.)

Atheropogon gracilis Spreng. Syst. 1: 293. 1825. (Based on *Chondrosium gracile* H.B.K.)

Eutriana oligostachya Kunth, Rév. Gram. 96. 1829. (Based on *Atheropogon oligostachyus* Nutt.)

Chondrosium gracile var. *polystachyum* Nees, *Linnaea* 19: 692. 1847. (Type from Mexico, *Aschenborn 153*.)

Chondrosium oligostachyum Torr. in Marcy, Expl. 300. 1853. (Based on *Atheropogon oligostachyum* Nutt.)

Bouteloua oligostachya Torr.; A. Gray, Man. ed. 2. 553. 1856. (Based on *Atheropogon oligostachyus* Nutt.)

Bouteloua stricta Vasey Bull. Torrey Club 15: 49, scarcely described. 1888; Bull. U. S. Dep. Agr. Bot. 12: no. 45. 1890. (Type from western Texas, *Nealley*.)

Bouteloua oligostachya var. *major* Vasey; L. Dewey, Contr. U. S. Nat. Herb. 2: 531. 1894. (Type from Arizona, *Lenmon 427*.)

Bouteloua oligostachya var. *pallida* Scribn.; Beal, Grasses N. Am. 2: 418. 1896. (Type from Mexico, *Pringle 407*.)

Bouteloua gracilis var. *stricta* Hitchc. Jour. Wash. Acad. 23: 454. 1933. (Based on *B. stricta* Vasey.)

Perennial; culms densely tufted, erect, 15-60 cm. tall, glabrous; leaves mostly crowded toward the base, the sheaths glabrous, hispid at the throat, the blades firm, flat at the base, involute-attenuate, curved or flexuous, 5-10 cm. (rarely to 15 cm.) long, 1-2 mm. wide, glabrous or sometimes sparsely pilose, the margins scabrous; spikes 1-3, usually 2, ascending or spreading, straight or somewhat curved, 2-4.5 cm. long (mostly 3-4 cm.); first glume narrow, acuminate, 3 mm. long, the second broader, acuminate, 4 mm. long, very sparsely papillose-hispid on the keel, otherwise glabrous; lemma 4 mm. long, bearded at the base, long-pilose on both sides of the midnerve, the margins shortly ciliate, the tip shallowly lobed, the central awn about 1 mm. long, the lateral ones a little longer; rudiment 2 mm. long, densely bearded at the base, the lobes broad, cucullate, the awns about 3 mm. long, an additional awnless rudimentary floret sometimes developed.

TYPE LOCALITY: Mexico (*Humboldt & Bonpland*).

DISTRIBUTION: Prairies and open ground, Manitoba and Alberta, and southward and south-westward to Texas, southern California, and Mexico.

ILLUSTRATIONS: H.B.K. Nov. Gen. & Sp. 1: *pl. 58*; Bull. U. S. Dep. Agr. Bot. 12: *pl. 41*, *pl. 45*; Bull. U. S. Dep. Agr. Agrost. 7: *f. 204*; Bull. U. S. Dep. Agr. 772: *f. 114*; Britt. & Brown, Ill. Fl. *f. 412*; ed. 2. *f. 549*; Hitchc. Man. *f. 1098*.

9. *Bouteloua eriopoda* (Torr.) Torr. Pacif. R. R. Rep. 4: 155. 1857.

Chondrosium eriopodum Torr. in Emory, Notes Mil. Rec. 154. 1848.

Bouteloua brevifolia Buckl. Proc. Acad. Phila. 1862: 93. 1862. (Type from western Texas, *Wright 748*.)

Perennial; culms wiry, straggling, sparsely stoloniferous, geniculate at the nodes, felty-pubescent, the base rather hard and knotty; upper sheaths shorter than the internodes, glabrous, the lowermost crowded, felty-pubescent; blades flat or loosely rolled, attenuate, mostly 5-10 cm. long, 1-2 mm. wide, glabrous; spikes 3-5, mostly 2-5 cm. long, somewhat curved,

ascending or sometimes spreading; spikelets rather loosely arranged, nearly appressed to the rachis; glumes acuminate, the first narrow, 3 mm. long, the second broader, 7 mm. long, glabrous; lemma 6-7 mm. long, bearded at the base, sparsely pilose on the margins and midnerve, acuminate, gradually narrowed into the awn, the awn 3-4 mm. long, the lateral awns very short; rudiment short-bearded at the top of the slender rachilla-joint, almost reduced to 3 slender scabrous awns about 7 mm. long.

TYPE LOCALITY: New Mexico (*Bigelow*).

DISTRIBUTION: Mesas, hills and dry open ground, Utah, western Texas, New Mexico, Arizona, and northern Mexico.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12¹: *pl.* 37; Bull. U. S. Dep. Agr. Agrost. 7: *f.* 199; Hitchc. Man. *f.* 1101.

10. *Bouteloua sonora* D. Griff. Contr. U. S. Nat. Herb.

14: 389. 1912.

Stoloniferous perennial; culms tufted, branching, geniculate-spreading, or usually solitary, erect from the distant nodes of the stolons, glabrous; ligule ciliate, 1-1.5 mm. long; blades flat or loosely involute, 2-6 cm. long, 1-2 mm. wide, scabrous on the upper surface, glabrous on the lower; spikes 4-6, 1-2 cm. long, ascending or spreading, curved; glumes acute, glabrous, or scabrous on the keel, the first 1 mm. long, the second 2 mm. long; lemma 2.5 mm. long, deeply cleft for one third of its length, the lobes obtuse or subacute, minutely erose, the awns from between the lobes about 1.5 mm. long, scabrous; rudiment cleft to the base, the intermediate lobes 1 mm. long, obtuse, the awns 2-3 mm. long, the rachilla with a tuft of spreading hairs at the summit.

TYPE LOCALITY: "Yaqui River," Sonora (*Palmer*).

DISTRIBUTION: Gravelly or stony ground near the sea, northwestern Mexico.

ILLUSTRATION: Contr. U. S. Nat. Herb. 14³: *f.* 43.

11. *Bouteloua Karwinskii* (Fourn.) D. Griff. Contr. U. S. Nat.

Herb. 14: 394. 1912.

Chondrosium Karwinskii Fourn. Mex. Pl. Gram. 2: 137. 1886.

Perennial; culms slender, erect, from a rather hard rhizomatous base, 20-30 cm. tall; sheaths shorter than the internodes, glabrous or papillose, more or less hispid at the throat, the margins usually ciliate; ligule ciliate, about 0.3 mm. long; blades flat at the base, involute and flexuous toward the tip, 3-9 cm. long, 1-2 mm. wide at the base, scabrous on the upper surface, glabrous, sparsely pilose or papillose-pilose on the lower; spikes 3-5, 1-1.8 cm. long, rather distant, ascending to spreading, more or less curved; first glume narrow, acuminate, 1.5 mm. long, the second broader, acute, 2 mm. long; lemma 3 mm. long, acute, mucronate, the lateral awns about 1.5 mm. long, appressed-pubescent along the midnerve and on the margins; rudiment rather deeply cleft, the intermediate lobes broad, obtuse, the awns 1.5 mm. long, a second much reduced nearly awnless rudiment often developed.

TYPE LOCALITY: "Cañon de las Minas et Victoria," Mexico (*Karwinsky 1479*).

DISTRIBUTION: Central Mexico.

ILLUSTRATION: Contr. U. S. Nat. Herb. 14³: *f.* 47.

12. *Bouteloua Rothrockii* Vasey, Contr. U. S. Nat. Herb.

1: 268. 1893.

Perennial, or sometimes flowering the first year and appearing like an annual; culms tufted, erect or rarely decumbent at the base, branching, mostly 20-60 cm. tall (rarely less), glabrous; sheaths shorter than the internodes, glabrous; ligule ciliate, 1 mm. long; blades flat, acuminate, 5-15 cm. long, 1-3 mm. wide, scabrous, the margins papillose-ciliate toward the base; spikes 4-8, appressed to spreading, 1.5-4 cm. long, the rachis scabrous; first glume obtuse, hyaline, 1.5 mm. long; second glume broader, 3 mm. long, pubescent, short-awned from between the short irregular teeth; lemma 3 mm. long, densely villous with spreading

hairs on the lower part of the back and margins, the awns 2-3 mm. long; rudiment 1.5 mm. long, bearded at the base, the lobes cucullate, the awns about 3 mm. long.

TYPE LOCALITY: Cottonwood, Arizona (*Rothrock 347*).

DISTRIBUTION: Mesas, sandy plains, and rocky hills, Arizona, southern California, and northern Mexico.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 203; Hitchc. Man. f. 1095.

13. *Bouteloua trifida* Thurber, in S. Wats. Proc. Am. Acad.

18: 177. 1883.

Bouteloua Burkii Scribn., in S. Wats. Proc. Am. Acad. 18: 179. 1883. (Type from Laredo, Texas, *Berlandier 1427*.)

Chondrosium Trinii Fourn. Mex. Pl. Gram. 2: 136. 1886. (Type from Laredo, Texas, *Berlandier 1427*.)

Chondrosium Virletii Fourn. Mex. Pl. Gram. 2: 136. 1886. (Type from San Luis Potosí, Mexico, *Virlet 1373*.)

Bouteloua trifida var. *Burkii* Vasey; L. Dewey, Contr. U. S. Nat. Herb. 2: 532. 1894. (Based on *B. Burkii* Scribn.)

Bouteloua Trinii D. Griff. Contr. U. S. Nat. Herb. 14: 387. 1912. (Based on *Chondrosium Trinii* Fourn.)

Perennial; culms densely tufted, erect, 10-35 cm. (mostly about 20 cm.) tall, scaberulous; sheaths glabrous or scaberulous, the lower ones longer, the upper shorter than the internodes; ligule ciliate, about 0.5 mm. long; blades flat, acute, scabrous, 0.8-5 cm. long, 0.5-1 mm. wide; spikes 3-6, 1-3 cm. long, appressed to spreading; spikelets spreading or nearly appressed; glumes acuminate, glabrous, the first 3.5 mm. long, the second 4.5 mm. long, scarcely broader than the first; body of lemma about 2 mm. long, glabrous, or pubescent toward the base, the 3 slender lobes gradually narrowed into awns, these about 5 mm. long; rudiment cleft to the base, the lobes gradually narrowed into the awns, about as long as those of the fertile lemma.

TYPE LOCALITY: Monclova, Coahuila (*Palmer 1355* in 1880).

DISTRIBUTION: Dry prairies, chaparral, and rocky slopes, western Texas to southwestern Utah, Arizona, and northern Mexico.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12¹: pl. 36; pl. 46; Bull. U. S. Dep. Agr. Agrost. 7: f. 206; 207; Hitchc. Man. f. 1103.

14. *Bouteloua alamosana* Vasey, Contr. U. S. Nat. Herb.

1: 115. 1891.

Annual; culms in rather dense tufts, erect or usually decumbent-spreading, 6-40 cm. tall, branching, glabrous; sheaths mostly much shorter than the internodes, glabrous to papillose-hispid; ligule ciliate, about 0.5 mm. long; blades flat, 3-8 cm. long, mostly 2-3 mm. wide, nearly glabrous or usually papillose-pilose; axis of the inflorescence scabrous to densely pubescent; spikes 4-9, or fewer in depauperate specimens, stiffly ascending or spreading, falling entire, usually bearing 3 spikelets, the rachis densely pubescent at the base, ciliate, the back often villous; glumes acuminate, scabrous or hispid on the keel, the first 4-6 mm. long, the second 6-8 mm. long; lemma acute, 6-7 mm. long, not cleft, glabrous, the central awn about 2 mm. long, scabrous, the lateral ones a little shorter; palea a little longer than the body of the lemma, bifid, the keels scabrous; rudiment staminate, glabrous, deeply cleft, the lobes acuminate, the awns flattened toward the base, scabrous or hispid on the margins, 10-15 mm. long.

TYPE LOCALITY: Alamos, Sonora (*Palmer 698* in 1890).

DISTRIBUTION: Sonora; Honduras, Costa Rica, Nicaragua and Salvador.

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 1: f. 48; 14³: f. 48.

15. *Bouteloua disticha* (H.B.K.) Benth. Jour. Linn. Soc.

19: 105. 1881.

Polyodon distichum H.B.K. Nov. Gen. & Sp. 1: 175. 1816.

Eutriana Polyodon Trin. Gram. Unif. 242. 1824. (Based on *Polyodon distichum* H.B.K.)

Atheropogon distichus Spreng. Syst. 1: 294. 1825. (Based on *Polyodon distichum* H.B.K.)

Eutriana pilosa Hook. f. Trans. Linn. Soc. Bot. 20: 173. 1847. (Type from Albemarle Island, Galapagos Islands, *Macrae*.)

Eutriana gracilis Hook. f. Trans. Linn. Soc. Bot. 20: 175. 1847. (Type from Tucuman, Argentina, *Tweedie*.)

Bouteloua pilosa Benth.; S. Wats. Proc. Am. Acad. 18: 179. 1883. (Based on *Eutriana pilosa* Hook. f.)

Eutriana mucronata F. Aesch. Freg. Eugenies Resa Bot. 118. 1910. (Type from Ecuador.)

Annual; culms slender, branching, usually decumbent-spreading, sometimes straggling, glabrous; sheaths mostly shorter than the internodes, glabrous or usually papillose-pilose, especially toward the summit, the collar often densely pubescent; ligule ciliate, about 0.5 mm. long; blades flat, acuminate, 5–20 cm. long, rarely longer, 2–7 mm. wide, scabrous, more or less papillose-pilose; spikes 10–25, 5–8 mm. long, not including the awns, usually spreading, falling entire; glumes acuminate, scabrous, the first 3–5 mm. long, the second 5–8 mm. long; fertile lemma 5–6 mm. long, 3-toothed, the teeth aristate, the central one minutely bifid; rudiment small, reduced to an awn scarcely longer than the fertile floret, or glumaceous, the tip deeply bifid, the central awn rather stout, as much as 1 cm. long, the lateral ones from near the middle of the lemma, shorter and more slender than the central.

TYPE LOCALITY: Quito, Ecuador (*Humboldt & Bonpland*.)

DISTRIBUTION: Open or brushy places, Guatemala and the West Indies, and southward to Peru; also in Galapagos Islands.

ILLUSTRATIONS: H.B.K. Nov. Gen. & Sp. 1: *pl.* 55; Contr. U. S. Nat. Herb. 14³: *f.* 60, 61.

16. *Bouteloua aristidoides* (H.B.K.) Griseb. Fl. Brit. W.

Ind. 537. 1864.

Dinebra aristidoides H.B.K. Nov. Gen. & Sp. 1: 171. 1816.

Atheropogon aristidoides R. & S. Syst. Veg. 2: 415. 1817. (Based on *Dinebra aristidoides* H.B.K.)

Eutriana aristidoides Trin. Gram. Unif. 242. 1824. (Based on *Atheropogon aristidoides* R. & S.)

Dinebra hirsuta Presl, Rel. Haenk. 1: 292. 1830. (Type from Peru, *Haenke*.)

Eutriana hirsuta Kunth, Rév. Gram. 1: Suppl. XXXIII. 1830. (Based on *Dinebra hirsuta* Presl.)

Bouteloua gracilis "Hook.?"; Vasey, in Rothr. Bot. Wheeler's Surv. 287. 1878. (Type from Arizona, *Rothrock* 701.)

Bouteloua ciliata Griseb. Abh. Ges. Wiss. Gött. 24: 302. 1879. (Type from Juramento, Argentina, *Lorentz & Hieronymus* 352.)

Triathera aristidoides Nash, in Small, Fl. SE. U. S. 137, 1327. 1903. (Based on *Dinebra aristidoides* H.B.K.)

Bouteloua aristidoides var. *arizonica* M. E. Jones, Contr. W. Bot. 14: 13. 1912. (Tucson, Arizona, *Thornber* 177.)

Annual; culms slender, branching, decumbent-spreading, geniculate, 10–40 cm. (usually 15–25 cm.) tall, glabrous; sheaths much shorter than the internodes, glabrous, hispid at the mouth; ligule ciliate, about 0.5 mm. long; blades flat or drying involute, attenuate-pointed, 1–6 cm. or rarely as much as 10 cm. long, 1–2 mm. wide, glabrous below, scabrous and sparsely pilose above; spikes few to several, 1–2 cm. long, abruptly spreading or reflexed, falling entire, the sharp-pointed base densely pubescent with stiff appressed hairs; spikelets 2–6, appressed, distant, the lowest one without the 3-awned rudiment; first glume narrow or subulate, 1-nerved, 1–3 mm. long, the second broader, 3-nerved, 5–6 mm. long; lemma acuminate, about 5 mm. long, more or less pilose; minutely toothed; awns of rudimentary floret about 5 mm. long, somewhat spreading.

TYPE LOCALITY: Mexico (*Humboldt & Bonpland*.)

DISTRIBUTION: Deserts, mesas, and dry open ground, western Texas to southern California and northern Mexico; also from Peru and Brazil to Argentina.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12³: *pl.* 35; Bull. U. S. Dep. Agr. Agrost. 7: *f.* 196; Contr. U. S. Nat. Herb. 14³: *f.* 49; Hitchc. Man. *f.* 1080.

17. *Bouteloua annua* Swallen, Jour. Wash. Acad. 25: 414. 1935.

Annual; culms in dense clumps, branching, erect or geniculate-spreading at the base, 3–25 cm. tall; sheaths shorter than the internodes, glabrous; ligule ciliate, 0.2 mm. long; blades flat, 1–3.5 cm. long, 1.5–2 mm. wide, acute, pubescent on the upper surface or nearly glabrous; spikes 2–7, falling entire, rather distant, ascending or spreading, 1.5–2 cm. long, bearing 4–7 usually appressed, green or purple spikelets; glumes acuminate, scabrous on the keel, the first narrow, 3.5–4 mm. long, the second much broader, 6–7 mm. long; lemma 7–9

mm. long, 3-toothed, densely pubescent at the base, pilose in lines on both sides of the midnerve and on the margins; rudiment cleft to the base, the lobes with their awns 5-7 mm. long, sparsely appressed-pilose in lines along the nerves, the rachilla appressed-pilose on the margins.

TYPE LOCALITY: San Ignacio, Baja California (*Shreve*).

DISTRIBUTION: Known only from the type locality.

18. *Bouteloua stolonifera* Scribn. Proc. Acad. Phila.

1891: 302. 1891.

Stoloniferous perennial; culms in small dense clumps, 4-10 cm. tall; sheaths overlapping, glabrous; blades flat or loosely involute, subattenuate, 1-8 cm. long, 0.5-1 mm. wide, glabrous, or scabrous on the upper surface and on the margins; ligule membranaceous, hyaline, truncate, as much as 1 mm. long; spike solitary, spreading, loosely flowered, usually conspicuously arcuate, falling entire; spikelets on pedicels 1 mm. long, spreading, more or less pectinate; glumes acuminate, 1-nerved, scabrous on the keel, the first 4-5 mm. long, the second somewhat broader, 6-8 mm. long, very sparsely hispid with long hairs; lemma 7-9 mm. long, bearded at the base, the back glabrous, deeply 3-lobed, the lobes very narrow, the lateral ones often reduced to awns, the central minutely bifid, the awns mostly 3-5 mm. long, scabrous, the lateral ones more slender than the central; rudiment reduced to 3 slender scabrous awns, 1-2 cm. long, somewhat broadened at the base, a secondary rudiment sometimes present, with awns a little shorter than those of the primary one.

TYPE LOCALITY: Honda Station, Zacatecas (*Pringle 3174*).

DISTRIBUTION: Plains, Zacatecas and San Luis Potosí.

ILLUSTRATION: Contr. U. S. Nat. Herb. 14²: f. 30.

19. *Bouteloua nervata* Swallen, sp. nov.

Stoloniferous perennial, forming large patches; culms in small dense tufts, 5-8 cm. tall; stolons arched, wiry; sheaths crowded, glabrous or pilose; ligule ciliate, about 0.2 mm. long; blades firm, flat, acuminate, 2-5 cm. long, 1.5-2 mm. wide, pilose or papillose-pilose, the margins more or less papillose-ciliate; spikes 1 or 2, approximate, spreading, falling entire, the rachis 6-10 mm. long, straight or nearly so, densely pubescent at the base; spikelets usually spreading, subpectinate, bearded at the base; glumes acuminate, the first narrow, 1-nerved, pale, 3.5 mm. long, the second much broader, 3-5 nerved, purple-tinged, 7-8 mm. long; lemma 8 mm. long, glabrous, irregularly 3-toothed, the teeth awnlike, awn-pointed or short-awned, 2-4 mm. long; palea as long as the body of the lemma, bifid; rudimentary florets 3, reduced to slender erect scabrous awns about 15 mm. long, flattened at the base.

Perennis, stolonifera; culmi 5-8 cm. alti, caespitiosi; vaginae internodiis multo longiores, glabrae vel pilosae; ligula ciliata, 0.2 mm. longa; laminae planae, firmae, acuminatae, 2-5 cm. longae, 1.5-2 mm. latae, pilosae vel papilloso-pilosae, marginibus sparse papilloso-ciliatis; spicae 1-2, divergens, rachide 6-10 mm. longa, basi dense pubescenti; spiculae subpectinatae; gluma prima acuminata 3.5 mm. longa, 1-nervia; gluma secunda acuminata, 7-8 mm. longa, 3-5-nervia; lemma 8 mm. longum, glabrum, 3-dentatum, dentibus angustis, breviter aristatis; flosculi imperfecti 3, lemmatibus reductis aristis 15 mm. longis.

Type collected on a rocky hill, Pachuca, Hidalgo, altitude 8000 feet, September 6-7, 1910, A. S. Hitchcock 6734 (U. S. Nat. Herb. no. 883931).

DISTRIBUTION: Dry mesas and rocky hills, Hidalgo.

20. *Bouteloua chondrosioides* (H.B.K.) Benth.; S. Wats. Proc.

Am. Acad. 18: 179. 1883.

Dinebra chondrosioides H.B.K. Nov. Gen. & Sp. 1: 173. 1816.

Bouteloua ovata Lag. Gen. & Sp. Nov. 5. 1816. (Type from Mexico.)

Atheropogon chondrosioides R. & S. Syst. Veg. 2: 416. 1817. (Based on *Dinebra chondrosioides* H.B.K.)

Actinochloa ovata R. & S. Syst. Veg. 2: 420. 1817. (Based on *Bouteloua ovata* Lag.)

Eutriana cristata Trin. Gram. Unifl. 241. 1824. (Based on *Atheropogon chondrosioides* R. & S.)

Chondrosium Humboldtianum Kunth, Rév. Gram. 93. 1829. (Based on *Dinebra chondrosioides* H.B.K.)

?*Erucaria villosa* Cerv. *Naturaleza* 1: 348. 1870. (Mexico.)

Bouteloua Havardii Vasey; S. Wats. Proc. Am. Acad. 18: 179. 1883. (Type from Limpio Mountains, Texas, *Havard* in 1881.)

Perennial; culms tufted, erect, 15-55 cm. tall, glabrous; leaves clustered toward the base, the sheaths glabrous, hispid at the throat, the blades flat, firm, 4-12 cm. (rarely more than 15 cm.) long, 2-3 mm. wide, glabrous or sparsely hispid, the margins often papillose-ciliate toward the base; ligule ciliate, about 0.5 mm. long; spikes 3-8, falling entire, ascending or spreading, rhomboid, tinged with purple, 1-1.5 cm. (rarely to 2 cm.) long, the rachis densely long-ciliate on the margin; spikelets crowded, appressed or more or less pectinately arranged; first glume 3-5 mm. long, acuminate, ciliate on the keel; second glume 7-8 mm. long, acuminate, hairy; lemma about 7 mm. long, hairy, especially on the midnerve and margins, the tip three-toothed, awnless; awns of the rudimentary floret 5-10 mm. long, scabrous.

TYPE LOCALITY: Michoacan (*Humboldt & Bonpland*).

DISTRIBUTION: Mesas and rocky hills, Texas and southern Arizona to Costa Rica.

ILLUSTRATIONS: H.B.K. Nov. Gen. & Sp. 1: *pl.* 53; Bull. U. S. Dep. Agr. Bot. 12: *pl.* 38; Bull. U. S. Dep. Agr. Agrost. 7: *f.* 198; Hitchc. Man. *f.* 1087.

21. *Bouteloua eludens* D. Griff. Contr. U. S. Nat. Herb.

14: 401. 1912.

Perennial; culms densely tufted, erect, 25-70 cm. tall; sheaths glabrous, the lower ones crowded, the upper ones shorter than the internodes; blades firm, flat, attenuate, somewhat flexuous, 5-15 cm. long, 1-2.5 mm. wide, glabrous or pilose on the upper surface, the margins scabrous; spikes 10-15, about 1 cm. long, roughly triangular, spreading or drooping, falling entire, the rachis ciliate; spikelets 3-6, crowded; glumes acuminate, hirsute, the first narrow, about 5 mm. long, the second broader, 7-8 mm. long; lemma 6-7 mm. long, 3-toothed, glabrous on the lower part of the back, hairy on the margins and toward the summit; second floret often staminate, with 4 slender teeth, awned from between the teeth, the awns flattened, stout, hairy, 5-6 mm. long; a rudimentary floret, similar to the second but much reduced, often developed.

TYPE LOCALITY: Santa Rita Mountains, Arizona (*Griffiths 7269*).

DISTRIBUTION: Rocky hills, southern Arizona and Sonora.

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 14: *pl.* 78, 79; Hitchc. Man. *f.* 1086.

22. *Bouteloua Vaneedenii* Pilger, in Urban, Symb. Antill.

6: 2. 1909.

Perennial; culms slender, densely tufted, erect, 30-45 cm. tall, glabrous; sheaths glabrous; ligule minute, ciliate; blades involute, filiform, attenuate, flexuous, glabrous; inflorescence 8-15 cm. long; spikes 10-20, 1-3-flowered, spreading or reflexed, falling entire; spikelets few, appressed; first glume very narrow, acuminate, 5 mm. long, the second broader, subacute, 6 mm. long, glabrous; lemma 5 mm. long, glabrous, 3-toothed, the teeth awn-pointed, about 1 mm. long; rudiment reduced to 1-3 slender scabrous awns, shorter than the fertile floret.

TYPE LOCALITY: Anguilla, Leeward Islands (*Boldingh*).

DISTRIBUTION: Dry limestone rocks near the sea, Cuba; Leeward Islands; also in Venezuela.

ILLUSTRATION: Misc. Publ. U. S. Dep. Agr. 243: *f.* 86.

23. *Bouteloua pedicellata* Swallen, sp. nov.

Perennial, stoloniferous; culms in small dense tufts, erect, simple, 12-23 cm. tall; stolons very slender, arching, as much as 40 cm. long; sheaths mostly overlapping, or the upper ones shorter than the internodes, scaberulous; ligule ciliate, 0.5-1 mm. long; blades involute, scabrous, 2-5 cm. long, recurved; spikes 10-22, arcuate-spreading or reflexed, falling entire, the rachis about 6 mm. long, flattened, ciliate, bearing a single spikelet attached 2-3 mm. from the base and therefore appearing pedicellate; glumes subacute, scabrous on the keel, the first 4 mm. long, the second 7 mm. long; rachilla-joint below the fertile floret 0.5 mm. long; lemma 6 mm. long, acute, glabrous, the tip minutely bifid, with an awn 0.5 mm. long from between

the teeth; palea broad, nearly as long as the lemma, the nerves approximate, produced into mucros; rudiment very small, usually with a single awn a little shorter than the fertile floret.

Perennis, stolonifera; culmi erecti, 12–23 cm. alti; vaginae internodiis longiores vel superiores internodiis breviores, scaberulae; ligula ciliata, 0.5–1 mm. longa; laminae 2–5 cm. longae, involutae, recurvatae, scabrae; spicae 10–22, arcuatae, divergentes vel recurvatae, rachide 6 mm. longa, plana, ciliata; spicula 1, pseudo-pedicellata; glumae subacutae, carinis scabris; gluma prima 4 mm. longa, secunda 7 mm. longa; internodius rachillae infra flosculus fertile 0.5 mm. longus; lemma 6 mm. longum, acutum, glabrum, minute bifidum, arista 0.5 mm. longa; flosculus imperfectus minutus aristatus.

Type collected on a rocky hill, Chalchicomula, Puebla, altitude 9000 feet, August 19, 1910, A. S. Hitchcock 6302 (U. S. Nat. Herb. no. 883950).

DISTRIBUTION: Known only from the type locality.

24. *Bouteloua juncea* (Desv.) Hitchc. Contr. U. S. Nat. Herb.
17: 343. 1913.

Triathera juncea Desv.; Beauv. Agrost. 40. 179. 1812.

Eutriana juncea Trin. Gram. Unif. 238. 1824. (Type from Santo Domingo.)

Eutriana Ledebourii Trin. Gram. Unif. 238. 1824. (Type from Santo Domingo.)

Atheropogon dominicensis Spreng. Syst. 1: 293. 1825. (Based on *Triathera juncea* Desv.)

Triana juncea D. Griff. Contr. U. S. Nat. Herb. 14: 354. 1912. (Based on *Triathera juncea* Desv., misapplied.)

Perennial; culms very slender, branching, erect or decumbent-spreading, 5–30 cm. tall, glabrous; sheaths glabrous, with a tuft of long hairs at the throat; ligule ciliate, about 0.5 mm. long; blades involute, rarely flat, curved, 1–4 cm. long, or shorter in depauperate specimens, glabrous beneath, scabrous and pilose above, especially near the base; spikes usually 10–20, very slender, ascending, falling entire, bearing a single spikelet; spikelets short-bearded at the base; first glume 1 mm. long, abruptly acute or subobtusely, short-awned; second glume acuminate, 2.5–3 mm. long; fertile lemma 4 mm. long, 3-toothed, glabrous on the back, the margins sparsely pilose, the nerves excurrent less than 0.5 mm.; rudiment reduced to 3 slender scabrous awns 5–9 mm. long.

TYPE LOCALITY: Hispaniola.

DISTRIBUTION: Dry rocky hills and open ground, Cuba, Hispaniola, and Puerto Rico.

ILLUSTRATION: Beauv. Agrost. pl. 9. f. 4.

25. *Bouteloua rigidisetata* (Steud.) Hitchc. Jour. Wash. Acad.
23: 453. 1933.

Aegopogon rigidisetatus Steud. Syn. Gram. 146. 1854.

Bouteloua texana S. Wats. Proc. Am. Acad. 18: 196. 1883. (Type from Texas, *Berlandier 1535*.)

Polyodon texanus Nash in Small, Fl. SE. U. S. 138, 1327. 1903. (Based on *Bouteloua texana* S. Wats.)

Perennial; culms densely tufted, erect, 10–40 cm. tall, glabrous; sheaths glabrous, or hispid at the throat, the lower ones longer than the internodes, the upper ones longer than the lower but shorter than the internodes; blades involute, or flat toward the base, curved or flexuose, attenuate, 2–12 cm. long, or longer on the innovations, 1–2 mm. wide, glabrous or pilose, especially on the upper surface, the margins scabrous; spikes 5–9, about 1 cm. long, spreading or recurved, falling entire, bearing 2–4 approximate spikelets; spikelets appressed to the short rachis; first glume narrow, almost subulate, 3–4 mm. long, the second much broader, 7–8 mm. long, acuminate, densely pubescent on the lower part of the nerve; lemma 5–6 mm. long, glabrous, the tip with 4 slender teeth, awned from between the teeth, the awns 3–4 mm. long, flattened, scabrous; rudimentary florets 2–3, the awns about 8 mm. long, flattened, scabrous.

TYPE LOCALITY: Texas (*Drummond*).

DISTRIBUTION: Dry prairies and rocky hills, Oklahoma, Texas, and northern Mexico.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: f. 197; Hitchc. Man. f. 1085.

26. *Bouteloua americana* (L.) Scribn. Proc. Acad. Phila.
1891: 306. 1891.

Aristida americana L. Syst. Nat. ed. 10. 2: 879. 1759.
Aristida Antillarum Poir. in Lam. Encyc. Suppl. 1: 451. 1810. (Type from Antilles.)
Bouteloua litigiosa Lag. Gen. & Sp. Nov. 5. 1816. (Based on *Aristida americana* L.)
Chaetaria Antillarum Beauv.; R. & S. Syst. Veg. 2: 395. 1817. (Based on *Aristida Antillarum* Poir.)
Atheropogon Antillarum Spreng. Syst. 1: 294. 1825. (Based on *Aristida Antillarum* Poir.)
Aristida subbiflora Steud. Syn. Gram. 138. 1854. (Type from Guadeloupe, *Duchaissing*.)
Eutriana Antillarum Steud. Syn. Gram. 217. 1854. (Based on *Chaetaria Antillarum* Beauv.)
Bouteloua elatior Griseb. Fl. Brit. W. Ind. 537. 1864. (Type from Antigua, *Wullschlagel 660*.)
Atheropogon americanus Fourn. Mex. Pl. Gram. 2: 139. 1886. (Based on *Aristida americana* L.)
Aristida adscensionis var. *americana* Kuntze, Rev. Gen. 3: 340. 1898. (Based on *A. americana* L.)

Perennial; culms rather slender, branching, decumbent, sometimes prostrate-spreading, 30–60 cm. long, glabrous; sheaths glabrous, mostly much shorter than the internodes; ligule very short, ciliate; blades flat, 5–20 cm. long (shorter in depauperate plants), 1–3 mm. wide, glabrous, the margins scabrous and papillose or papillose-pilose; spikes 4–10, 1–4 cm. long, linear, ascending or spreading, falling entire; spikelets appressed, overlapping but not crowded; glumes acuminate, similar, the first 3–4 mm. long, the second slightly broader, 4–5 mm. long, glabrous; fertile floret 4–5 mm. long, acuminate, glabrous, the callus densely hairy on the sides, the central awn terminal, 2–3 mm. long, the lateral ones about 1.5 mm. long, 1 mm. from the tip; palea acuminate, exceeding the lemma; rudiment reduced to 3 scabrous awns 8–10 mm. long, the middle one stouter.

TYPE LOCALITY: Jamaica.

DISTRIBUTION: Dry rocky hills, open ground, and waste places, West Indies, and southward to Brazil.

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 14: f. 57; Misc. Publ. U. S. Dep. Agr. 243: f. 87.

27. *Bouteloua Heterostega* (Trin.) D. Griff. Contr. U. S. Nat.
Herb. 14: 414. 1912.

Heterosteca juncifolia Desv. Nouv. Bull. Soc. Paris 2: 188. 1810.
Eutriana Heterostega Trin. Gram. Unifl. 242. 1824. (Based on *Heterosteca juncifolia* Desv.)
Atheropogon juncifolius Spreng. Syst. 1: 294. 1825. (Based on *Heterosteca juncifolia* Desv.)
Eutriana juncifolia Kunth, Rév. Gram. 95. 1829. (Based on *Heterosteca juncifolia* Desv.)
Bouteloua Humboldtiana Griseb. Mem. Am. Acad. II. 8: 532. 1862. (Type from Cuba, *Wright 739*.)
Bouteloua porphyrantha Wright, Anal. Acad. Ci. Habana 8: 201. 1871. (Type from Cuba, *Wright 739*.)
Atheropogon americana var. *depauperata* Fourn. Mex. Pl. Gram. 2: 139. 1886.
Heterosteca rhadina Nash, Bull. Torrey Club 30: 386. 1903. (Type from Puerto Rico, *Heller 6057*.)

Perennial; culms slender, branching, decumbent-spreading, 15–50 cm. long, glabrous; sheaths shorter than the internodes, glabrous; ligule minutely ciliate, 0.3 mm. long; blades flat, or involute toward the tip, straight or flexuous, 4–10 cm. long, 1–2 mm. wide, smooth or scabrous, rarely pilose, the margins sparingly papillose; spikes mostly 5–10, about 1.5 cm. long, stiffly spreading, falling entire, bearing 2–4 appressed spikelets, the rachis narrow, scabrous on the margins; glumes acuminate, 4–5 mm. long, scabrous or nearly glabrous on the keel; fertile floret 6–7 mm. long, glabrous, or short-bearded at the base, the awns about 1 mm. long; rudiment 5 mm. long, lobed, the lobes acute, sometimes rather short, the awn from between the lobes 5–8 mm. long, thickened toward the base, scabrous, the lateral awns more slender, nearly as long as the central.

TYPE LOCALITY: West Indies.

DISTRIBUTION: Rocky hillsides and dry open ground, Cuba, Hispaniola, and Puerto Rico.

ILLUSTRATION: Contr. U. S. Nat. Herb. 14: f. 59.

28. *Bouteloua radicata* (Fourn.) D. Griff. Contr. U. S. Nat.
Herb. 14: 411. 1912.

Dinebra bromoides H.B.K. Nov. Gen. & Sp. 1: 172. 1816. (Type from Mexico, *Humboldt & Bonpland*.) Not *Bouteloua bromoides* Lag. 1816.
Atheropogon bromoides R. & S. Syst. Veg. 2: 415. 1817. (Based on *Dinebra bromoides* H.B.K.)
Eutriana bromoides Trin. Fund. Agrost. 161. 1820. (Based on *Dinebra bromoides* H.B.K.)
Atheropogon radicosus Fourn. Mex. Pl. Gram. 2: 140. 1886.

Bouteloua bromoides var. *radicosa* Vasey; L. Dewey, Contr. U. S. Nat. Herb. 2: 533. 1894. (Based on *Atheropogon radicatus* Fourn.)

Perennial; culms densely tufted, from a hard rhizomatous base, simple or with short branches appearing late from the lower nodes, 25–80 cm. tall, glabrous; sheaths glabrous, hispid at the throat, the lower ones crowded, the upper ones much shorter than the internodes; blades flat, attenuate, flexuous or curled toward the tip, 5–15 cm. long, 2–3 mm. wide, the margins papillose-ciliate toward the base, sometimes papillose only; spikes 5–15, 1–3 cm. long, ascending or spreading, sometimes reflexed, falling entire, the rachis ciliate; spikelets bearded at the base, ascending; glumes broad, acute, glabrous, the first 5–6 mm. long, the second 7–8 mm. long; lemma about 8 mm. long, glabrous, 3-toothed, the teeth mucronate or awn-tipped; rudiment 5–6 mm. long, usually staminate, the teeth awned, 4–8 mm. long, the central one longer than the lateral.

TYPE LOCALITY: Mexico City (*Bourgeau 450*).

DISTRIBUTION: Rocky hillsides and canyons, southern New Mexico to southern California and Mexico.

ILLUSTRATIONS: H.B.K. Nov. Gen. & Sp. 1: *pl. 51*; Bull. U. S. Dep. Agr. Agrost. 17: *f. 502*; Contr. U. S. Nat. Herb. 14: *pl. 81*; Hitchc. Man. *f. 1088*.

29. *Bouteloua repens* (H.B.K.) Scribn. & Merr. Bull. U. S. Dep. Agr. Agrost. 24: 26. 1901.

Dinebra repens H.B.K. Nov. Gen. & Sp. 1: 172. 1816.

?*Bouteloua bromoides* Lag. Gen. & Sp. Nov. 5. 1816.

Atheropogon repens R. & S. Syst. Veg. 2: 416. 1817. (Based on *Dinebra repens* H.B.K.)

?*Actinochloa bromoides* R. & S. Syst. Veg. 2: 420. 1817. (Based on *Bouteloua bromoides* Lag.)

Eutriana repens Trin. Gram. Unif. 241. 1824. (Based on *Atheropogon repens* R. & S.)

Perennial; culms erect or ascending, rather stiff, branching, 20–50 cm. tall; sheaths glabrous or sparsely papillose-pilose; ligule minutely ciliate, 0.5 mm. long; blades usually firm, flat, 8–15 cm. long, 2–5 mm. wide, glabrous or scabrous, sometimes more or less papillose or papillose-pilose; spikes 5–10, 1.5–2.5 cm. long, rather close together, appressed or spreading, falling entire; glumes acuminate, subequal, about 7 mm. long, scabrous or hispid on the keel; lemma of fertile floret 8 mm. long, acute, the central awn 2–4 mm. long, the lateral 1.5–2 mm. long; rudiment glabrous, about 6 mm. long, deeply cleft, the awn from between the lobes 8–10 mm. long, broad at the base, scabrous, the lateral awns much more slender and a little shorter than the central one.

TYPE LOCALITY: Acapulco (*Humboldt & Bonpland*).

DISTRIBUTION: Rocky slopes, western Mexico to Panama.

ILLUSTRATIONS: H.B.K. Nov. Gen. & Sp. 1: *pl. 52*; Contr. U. S. Nat. Herb. 14³: *f. 58*.

30. *Bouteloua filiformis* (Fourn.) D. Griff. Contr. U. S. Nat. Herb. 14: 413. 1912.

Atheropogon filiformis Fourn. Mex. Pl. Gram. 2: 140. 1886.

Perennial; culms in small dense tufts, simple or branching, erect or decumbent, spreading at the base, 15–50 cm. tall, glabrous; sheaths glabrous or sparsely pilose; blades flat, acuminate, mostly 5–10 cm. long, 1–2 mm. wide, glabrous or sparsely pilose, the margins scabrous, usually more or less papillose-ciliate; ligule ciliate, less than 1 mm. long; spikes 5–10, ascending or spreading, mostly 1–2 cm. long, falling entire, the rachis shortly ciliate, densely pubescent at the base; glumes acuminate, subequal or the second a little longer, mostly 5–7 mm. long, glabrous, the keel scabrous to hispid; lemma about 7 mm. long, glabrous or bearded at the base, acuminate, the awns about 1 mm. long, scabrous; upper floret usually staminate, sometimes perfect, glabrous or bearded at the base, the lemma minutely bifid, the central awn thickish, 3–8 mm. long, the lateral ones more slender, a little shorter than the central.

TYPE LOCALITY: Hacienda de la Naranja, Mexico (*Karwinsky 991b*).

DISTRIBUTION: Rocky hills and open ground, Texas to Arizona and Guatemala.

ILLUSTRATIONS: Contr. U. S. Nat. Herb. 14: *pl. 83*; Hitchc. Man. *f. 1089*.

31. *Bouteloua pubescens* Pilger, Verh. Bot. Ver. Brand.
51: 193. 1909.

Perennial; culms tufted, erect or ascending, 20–30 cm. tall, simple or sparingly branched, the lower internodes rather short; sheaths much longer than the internodes or the uppermost shorter, densely velvety-pubescent; ligule ciliate, 0.2 mm. long; blades 5–11 cm. long, 2–5 mm. wide, flat, acuminate, densely soft-pubescent or pilose, the margins papillose; spikes 6–8, ascending or spreading, falling entire, approximate, or the lower ones remote, 1–2 cm. long, the rachis scabrous; glumes acuminate, 5 mm. long, scabrous on the keels; fertile floret bearded at the base; lemma 5–6 mm. long, glabrous, acute, the nerves excurrent 1 mm., the lateral ones about 1 mm. from the summit; palea a little longer than the lemma, narrowed toward the summit, the keels approximate, scabrous; upper floret 6–7 mm. long, staminate, glabrous at the base, the lemma deeply 3-cleft, the lateral lobes very narrow, the central 2-dentate, the awns 3–4 mm. long, scabrous.

TYPE LOCALITY: Malacatan, Guatemala (*Seler 3234*).

DISTRIBUTION: Sandy ground; known only from the type collection.

32. *Bouteloua Pringlei* Scribn. Circ. U. S. Dep. Agr. Agrost.
30: 4. 1901.

Perennial; culms tufted, erect, branching at the middle and upper nodes, about 1.5 meters tall, glabrous; sheaths nearly all shorter than the internodes, glabrous below except for the ciliate margins, very densely papillose-pilose upward, the hairs appressed or spreading, mostly implicate; ligule membranaceous, more or less erose, about 0.2 mm. long; blades flat, firm, acuminate or attenuate, as much as 30 cm. long, 5–7 mm. wide, papillose or papillose-pilose, the margins scabrous-serrate; spikes numerous, falling entire, spreading, sometimes reflexed, small and rather crowded toward the upper part of the axis, more distant and larger downward, the lowermost as much as 3 cm. long, sometimes with very short branchlets; spikelets more or less pectinate, at least those on the lower spikes; first glume subulate, 2–3 mm. long, more or less pilose; second glume broader, acuminate, pubescent and sparsely pilose; lemma 3.5–4 mm. long, glabrous on the back, pilose with spreading hairs on both sides of the lateral nerves, 3-toothed, the middle one acute, the lateral ones acuminate, awn-pointed; rachilla produced beyond the fertile floret as a short stipe; the rudiment obsolete.

TYPE LOCALITY: Limestone ledges above Iguala, Guerrero (*Pringle 8374*).

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: Contr. U. S. Nat. Herb. 14³: f. 50.

33. *Bouteloua latifolia* Swallen, sp. nov.

Perennial; culms branching at the upper nodes, erect from a hard rhizomatous base, 160 cm. tall, glabrous; sheaths, except the lowermost, shorter than the internodes, glabrous; ligule membranaceous, about 0.3 mm. long; blades flat, attenuate, 30–45 cm. long, 7–8 mm. wide, glabrous on both surfaces, the margins scabrous; spikes falling entire, about 50 on a common axis about 20 cm. long, progressively longer and more remote from the top downward, the lowermost as much as 3 cm. long, usually spreading, sometimes reflexed; spikelets crowded, appressed or somewhat spreading; first glume subulate, scabrous, 2.5–3 mm. long, the second broader, acuminate, 5 mm. long, scabrous and often villous, especially on both sides of the midnerve; lemma 5 mm. long, the margins conspicuously ciliate, the back sparsely appressed-pilose on the lower part on both sides of the midnerve, the tip acute, mucronate, the lateral nerves excurrent, the awns about 1 mm. long; rudiment 5 mm. long, the lemma glabrous on the back, the margins appressed-hispid below the tip, deeply cleft, the awn from between the lobes 5–7 mm. long, or shorter in the spikelets of the upper spikes, the lateral nerves excurrent below the middle of the lemma, the awns about 3 mm. long, appressed-hispid at the base, the palea well developed, pubescent.

Perennis; culmi erecti, ramosi, 160 cm. alti, glabri; vaginae internodiis breviores, glabrae; ligula membranacea, 0.3 mm. longa; laminae 30–45 cm. longae, 7–8 mm. latae, planae, attenu-

atae, glabrae, marginibus scabris; spicae circa 50, infima ad 3 cm. longa, divergens vel recurvata; spiculae densae, appressae vel divergentes; gluma prima 2.5–3 mm. longa, subulata, scabra, gluma secunda latior, 5 mm. longa, scabra et villosa; lemma 5 mm. longum, acutum, mucronatum, aristis lateralibus 1 mm. longis, in costa sparse pilosum, marginibus ciliatis; flosculus imperfectus 5 mm. longus, lemmate ad costam glabro, marginibus hispidis, fisso, arista inter lobos 5–7 mm. longa; aristis lateralibus circa 3 mm. longis.

Type collected on hills near Yautepec, Morelos, alt. 1200 meters, October 22, 1902, *Pringle 11217* (U. S. Nat. Herb. no. 460593).

DISTRIBUTION: Known only from the type locality.

34. *Bouteloua reflexa* Swallen, sp. nov.

Perennial; culms in large clumps, erect from a rather hard rhizomatous base, about 1 meter tall, glabrous; sheaths overlapping, glabrous; ligule membranaceous, about 0.2 mm. long; blades flat, attenuate, 15–25 cm. long, 3–4 mm. wide, scabrous, papillose-hispid on the upper surface near the base, the margins rather finely scabrous; inflorescence terminal and axillary; spikes mostly 40–50 on a common axis, 15–25 cm. long, falling entire, the upper ones approximate, spreading, about 5 mm. long, progressively longer and more distant downward, the lower ones as much as 1.5 cm. long, not more than 2 mm. wide, reflexed; spikelets appressed, not crowded; first glume narrow, acuminate, scabrous on the keel, 2–2.5 mm. long; second glume broader, subacuminate, awn-pointed, 3–3.5 mm. long, scabrous on the keel, otherwise glabrous; lemma 3.5–4 mm. long, glabrous, or sparsely appressed-pilose on the upper half, 3-lobed, the middle lobe broad, minutely bifid, the awn 0.5 mm. long, the lateral lobes very narrow, awnlike, about 1 mm. long; rachilla prolonged beyond the fertile floret as a naked stipe about 1 mm. long, the rudiment obsolete or sometimes developed as a single awn about as long as the fertile floret.

Perennis; culmi dense caespitiosi, erecti circa 1 meter alti, glabri; vaginae internodiis longiores, glabrae; ligula membranacea, 0.2 mm. longa; laminae 15–25 cm. longae, 3–4 mm. latae, planae, attenuatae, scabrae, supra ad basin papilloso-hispidae, marginibus scabris; inflorescentiae terminales et axillares, 15–25 cm. longae; spicae 40–50, deciduae, 0.5–1.5 cm. longae, ad 2 mm. latae, divergentes vel reflexae; spiculae appressae vix densae; gluma prima 2–2.5 mm. longa, angusta, acuminata ad carinam scabra; gluma secunda 3–3.5 mm. longa, latior, subacuminata, mucronata, ad carinam scabra; lemma 3.5–4 mm. longum, glabrum vel sparse pilosum, 3-lobatum, lobo medio minute bifido, arista 0.5 mm. longa, lobis lateralibus angustis, 1 mm. longis; flosculus imperfectus obsoletus.

Type collected on mountain sides near Lodiago, Sonora, October 9–15, 1891, *Palmer 1655* (U. S. Nat. Herb. no. 471374).

DISTRIBUTION: Known only from the type locality.

ILLUSTRATION: *Contr. U. S. Nat. Herb.* 14¹: f. 55 (as *B. acuminata*).

35. *Bouteloua Triaena* (Trin.) Scribn. Proc. Acad. Phila.

1891: 307. 1891.

Triaena racemosa H.B.K. Nov. Gen. & Sp. 1: 179. 1816.

Eutriana Triaena Trin. Gram. Unif. 239. 1824. (Based on *Triaena racemosa* H.B.K.)

Atheropogon Triaena Spreng. Syst. 1: 293. 1825. (Based on *Triaena racemosa* H.B.K.)

Dinebra cristata Presl, Rel. Haenk. 1: 293. 1830. (Type from Mexico, *Haenke*.)

Triathera racemosa Desv. Opusc. 72. 1831. (Based on *Triaena racemosa* H.B.K.)

Eutriana ? cristata Kunth, Enum. Pl. 1: 281. 1833. (Based on *Dinebra cristata* Presl.)

Triathera gracilis Fourn. Mex. Pl. Gram. 2: 141. 1886. (Type from Cuernavaca, Mexico, *Berlandier 1016*.)

Perennial; culms tufted, erect to widely spreading, 20–45 cm. tall, or in widely spreading plants as much as 80 cm. long; sheaths glabrous; ligule ciliate, 0.5–1 mm. long; blades flat, 5–20 cm. long, 1–3 mm. wide, glabrous or scabrous, the margins more or less papillose-ciliate near the base; spikes numerous, approximate on the elongate axis, spreading, short-pedicellate, falling entire, bearing a single spikelet, the axis prolonged beyond the spikelet in a rather slender bristle; glumes subacute, glabrous or scabrous, the first about 3 mm. long, the second about 5 mm. long; fertile lemma acuminate, awnless, 5–7 mm. long, glabrous or sparsely pilose;

rudiment narrow, inconspicuous, not cleft, the body about 2 mm. long, the awns 6-10 mm. long, scabrous.

TYPE LOCALITY: Guanajuata, Mexico (*Humboldt & Bonpland*).

DISTRIBUTION: Dry calcareous rocky hills and open ground, central Mexico to Guatemala.

ILLUSTRATIONS: H.B.K. Nov. Gen. & Sp. 1: *pl. 61*; Proc. Acad. Phila. 1891: 307. *f. 2*; Contr. U. S. Nat. Herb. 14²: *f. 19* (as *Triaena juncea* D. Griff.).

36. *Bouteloua uniflora* Vasey, Bot. Gaz. 16: 26. 1891.

Perennial; culms rather densely tufted, slender, erect, 15-35 cm. tall; leaves mostly crowded toward the base; sheaths rounded, usually glabrous, sometimes sparsely pilose toward the summit; ligule ciliate, 0.5 mm. long; blades 5-15 cm. long, 1-2 mm. wide, flat or loosely involute, somewhat flexuous, glabrous on the lower surface, scabrous on the upper surface and on the margins, occasionally sparsely pilose; spikes 20-50, approximate, spreading or reflexed, reduced to a single spikelet, falling entire, the rachis prolonged beyond the spikelet; first glume acute, 3 mm. long; second glume acute or subacuminate, 7 mm. long; lemma about as long as the second glume or a little shorter, minutely toothed, glabrous; palea narrow, nearly as long as the lemma; rudiment obsolete or reduced to a short slender bristle.

TYPE LOCALITY: Crockett County, Texas (*Nealley* in 1889).

DISTRIBUTION: Dry rocky hills and open ground, southern Texas and Tamaulipas.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Agrost. 7: *f. 194*; Contr. U. S. Nat. Herb. 14²: *f. 62*; Hitchc. Man. *f. 1082*.

37. *Bouteloua curtipendula* (Michx.) Torr. in Emory, Notes Mil. Rec. 154. 1848.

Chloris curtipendula Michx. Fl. Bor. Am. 1: 59. 1803. (Type from Illinois, *Michaux*.)

Bouteloua racemosa Lag. Var. Ci. 4: 141. 1805. (Type from Mexico.)

Atheropogon apludoides Muhl.; Willd. Sp. Pl. 4: 937. 1806. (Type from North America.)

Dineba curtipendula Beauv. Agrost. 98, 158, 160. 1812. (Presumably based on *Chloris curtipendula* Michx.)

Cynosurus secundus Pursh, Fl. Am. Sept. 728. 1814. (Type from "Upper Louisiana" [northern Middle Western States], *Bradbury*.)

Atheropogon racemosus R. & S. Syst. Veg. 2: 414. 1817. (Based on *Bouteloua racemosa* Lag.)

Dineba secunda R. & S. Syst. Veg. 2: 711. 1817. (Based on *Cynosurus secundus* Pursh.)

Eutriana curtipendula Trin. Fund. Agrost. 161. 1820. (Based on *Chloris curtipendula* Michx.)

Melica curtipendula Michx.; Steud. Nom. Bot. Phan. 1: 91, 519, as synonym of *Atheropogon apludoides* Muhl. 1821.

Cynodon curtipendula Rasp. Ann. Sci. Nat. 5: 303. 1825. (Based on *Dineba curtipendula* Beauv.)

Cynodon melicoides Rasp. Ann. Sci. Nat. 5: 303. 1825. (Based on *Bouteloua melicoides* Beauv.)

Andropogon curtipendulus Spreng.; Steud. Nom. Bot. ed. 2. 1: 90, as synonym of *Eutriana curtipendula* Trin. 1840.

Eutriana affinis Hook. f. Trans. Linn. Soc. 20: 174. 1847. (Localities cited, St. Louis, Missouri; Texas, *Drummond*.)

Bouteloua curtipendula var. *aristosa* A. Gray, Man. ed. 2. 553. 1856. (Type locality, Illinois, *Geyer*.)

Erucaria glabra Cerv. Naturaleza 1: 350. 1870. (Mexico.)

Atheropogon acuminatus Fourn. Mex. Pl. Gram. 2: 139. 1886. (Type from Mirador, Mexico, *Liebmann 583*.)

Atheropogon curtipendulus Fourn. Mex. Pl. Gram. 2: 138. 1886. (Based on *Bouteloua curtipendula* A. Gray [error for *Torrey*].)

Atheropogon medius Fourn. Mex. Pl. Gram. 2: 139. 1886. (Type from Mexico, *Liebmann 581*.)

Atheropogon affinis Fourn. Mex. Pl. Gram. 2: 141. 1886. (Based on *Eutriana affinis* Hook. f.)

Bouteloua racemosa var. *aristosa* Wats. & Coulter; in A. Gray, Man. ed. 6. 656. 1890. (Type from Illinois, *Geyer*.)

Bouteloua acuminata D. Griff. Contr. U. S. Nat. Herb. 14: 406. 1912. (Based on *Atheropogon acuminatus* Fourn.)

Perennial; culms erect from short rhizomes, 30 cm. to more than a meter tall; sheaths mostly shorter than the internodes, rounded, glabrous or sparsely papillose-pilose, more or less pilose at the throat; ligule 0.5 mm. long, ciliate; blades as much as 25 cm. long, 2-5 mm. wide, flat, attenuate, scabrous, especially on the margins, the upper surface sometimes pilose; spikes mostly 20-40, 0.5-2 cm. long, spreading or reflexed, falling entire; spikelets crowded, appressed or somewhat spreading; first glume about 4 mm. long, narrow, acuminate, scabrous on the keel; second glume 6-8 mm. long, much broader than the first, acute, scabrous; lemma 5-6 mm. long, glabrous or sparsely pilose, the tip 3-toothed; rudiment from nearly obsolete to as

much as 5 mm. long and rather broad, awned from between the teeth of the bifid apex, the awn mostly 3-6 mm. long, the lateral nerves excurrent in slender awns, from minute to 4 mm. long, often enclosing a second very small rudiment; spikelets in the upper spikes smaller, the rudiment inconspicuous or nearly obsolete.

TYPE LOCALITY: Illinois.

DISTRIBUTION: Open prairies and rocky hills, Maine and Ontario to Montana, and southward to Maryland, Alabama, Texas, and Salvador.

ILLUSTRATIONS: Bull. U. S. Dep. Agr. Bot. 12: *pl. 43*; Bull. U. S. Dep. Agr. Agrost. 7: *f. 195*; Contr. U. S. Nat. Herb. 14³: *f. 63*; Bull. U. S. Dep. Agr. 772: *f. 115*; Britt. & Brown, Ill. Fl. *f. 413*; ed. 2. *f. 550*; Hitchc. Man. *f. 1083*.

156. PENTARRHAPHIS H.B.K. Nov. Gen. & Sp. 1: 177. 1816.

Polyschistis Presl, Rel. Haenk. 1: 294. 1830. (Type species, *P. paupercula* Presl.)

Slender, densely tufted perennial grasses with mostly basal leaves and few to several short, obovate, spreading spikes, evenly arranged, alternate on opposite sides of a flattened rachis, falling entire. Spikes densely hairy, composed of two perfect 2-flowered spikelets, the lower one sometimes reduced to two slender bristles, the rachis bifid, prolonged beyond the spikelets as two hairy bristles; glumes villous, the first bristle-like, the second lanceolate, awned; lemmas deeply 3-lobed, the lobes awned; palea about as long as the lemma, bifid, the teeth aristate.

Type species, *Pentarrhaphis scabra* H.B.K.

Spikes with one perfect spikelet, the second spikelet reduced to two bristles.

1. *P. scabra*.

Spikes with two perfect spikelets.

2. *P. polymorpha*.

1. Pentarrhaphis scabra H.B.K. Nov. Gen. & Sp. 1: 178. 1816.

Eutriana Pentarrhaphis Trin. Gram. Unifl. 239. 1824. (Based on *Pentarrhaphis scabra* H.B.K.)

Atheropogon Pentarrhaphis Spreng. Syst. 1: 294. 1825. (Based on *Pentarrhaphis scabra* H.B.K.)

Polyschistis paupercula Presl, Rel. Haenk. 1: 294. 1830. (Type said to be from Luzon, doubtless error for Mexico, *Haenke*.)

Pentarrhaphis paupercula Hack. & Scribn. Bull. Torrey Club 17: 233. 1890. (Based on *Polyschistis paupercula* Presl.)

Culms erect, or sometimes geniculate at the lower nodes, 10-30 cm. tall, glabrous, the upper internodes elongate; sheaths rounded, glabrous, sometimes sparsely villous at the throat; ligule very short, minutely erose; blades flat or loosely involute, 3-5 cm. long, those of the culm about 1 cm. long, not more than 1 mm. wide, glabrous or scaberulous; spikes mostly 8-12, 6-8 mm. long, usually ascending, composed of one fertile spikelet and a group of five bristles, two of these being the bifid prolongation of the rachis, two a rudimentary spikelet, and one the first glume of the fertile spikelet; second glume of the fertile spikelet 3 mm. long, the scabrous awn from between the teeth, about 2 mm. long; lemma about 4 mm. long, deeply 3-lobed, sparsely hairy, the awns stout, scabrous, 3 mm. long; palea equaling the lemma, the teeth aristate.

TYPE LOCALITY: Queretaro (*Humboldt & Bonpland*).

DISTRIBUTION: Southern Mexico to Colombia.

ILLUSTRATIONS: H.B.K. Nov. Gen. & Sp. *pl. 60*; Presl, Rel. Haenk. *pl. 41. f. 12*; Contr. U. S. Nat. Herb. 14: *f. 20*.

2. Pentarrhaphis polymorpha (Fourn.) D. Griff. Contr. U. S. Nat. Herb. 14: 357. 1912.

Atheropogon polymorphus Fourn. Mex. Pl. Gram. 2: 141. 1886.

Pentarrhaphis Fournierana Hack. & Scribn. Bull. Torrey Club 17: 229. 1890. (Type from Guadalajara, Mexico, *Pringle 2559* in 1889.)

Culms erect or sometimes geniculate at the nodes, 10-40 cm. tall, the upper internodes elongate, the nodes ascending-villous, otherwise glabrous; leaves mostly crowded toward the base; sheaths rounded on the back, glabrous, more or less villous at the throat; ligule ciliate, about 0.5 mm. long; blades firm, flat, 2-10 cm. long, 1 mm. wide, the culm blades much shorter than the basal ones, scabrous, especially on the margins, sparsely hirsute on both surfaces;

spikes about 5 mm. long, villous, ascending or spreading; first glume 3-5 mm. long, scabrous, villous; second glume lanceolate, 3 mm. long, villous, the teeth short-aristate, the awn from between the teeth, 2-3 mm. long, scabrous; lemma 4-4.5 mm. long, cleft to the middle, the lateral lobes narrow, the central much broader, deeply toothed, very sparsely hispid, the awns of the lobes about 3 mm. long; palea as long as or slightly exceeding the lemma.

TYPE LOCALITY: San Luis de Potosí (*Virlet 1395*).

DISTRIBUTION: Hills and plains, central Mexico.

ILLUSTRATIONS: Bull. Torrey Club 17: *pl. 107, 108*; Contr. U. S. Nat. Herb. 14³: *f. 21*.

157. *OPIZIA* Presl, Rel. Haenk. 1: 293. 1830.

Low, monoecious or dioecious, stoloniferous, perennial grasses. Staminate spikelets 1-flowered, pectinately arranged in two rows on one side of a slender flattened rachis; glumes 1-nerved, acute, the first one third to one half as long as the second; lemma 3-nerved, acute, glabrous, awnless; palea as long as the lemma, the nerves close together, the margins broad, hyaline, enclosing the stamens. Pistillate spikes reduced to a single 1-flowered spikelet, alternate on opposite sides of a narrow flattened axis, disarticulating from the short discoid ciliate-tipped peduncles, the rachis very short, sometimes prolonged beyond the spikelet as a slender bristle; glumes thin, the first short, nerveless, hairy, the second longer, 3-nerved, subobtusate, hairy at least toward the base; lemma broad, indurate, 3-awned, pilose; palea shorter than the lemma, narrow between the crested keels, the margins very broad, enclosing the caryopsis; rachilla prolonged, adnate to the keels of the palea, bearing a 3-awned rudimentary floret.

Type species, *Opizia stolonifera* Presl.

1. *Opizia stolonifera* Presl, Rel. Haenk. 1: 293. 1830.

Plants forming dense mats; culms mostly in fascicles at the nodes of the stolons, 1-15 cm. tall, erect or geniculate at the nodes, glabrous; sheaths longer than the internodes, keeled, glabrous on the back, more or less villous at the throat; ligule membranaceous, 1 mm. long; blades 1-8 cm. long, 1-2 mm. wide, subobtusate, scabrous, especially on the margins; staminate spikes 1 or 2, 1-2 cm. long, spreading, subtended by 1 or 2 slender bristles, the spikelets 3 mm. long; pistillate spikes 7-12 mm. long, including the awns, villous at the base; first glume 1 mm. long, the second 3 mm. long; lemma 3 mm. long, sparsely pilose, 3-toothed at the summit, the awns from between the teeth, flat at the base, rounded upward, coarse, straight, scabrous, 6-10 mm. long; awns of the rudimentary floret about as long as those of the fertile lemma.

TYPE LOCALITY: Mexico (*Haenke*).

DISTRIBUTION: Prairies, open ground and waste places, southern Mexico; Cuba; also in Trinidad.

ILLUSTRATIONS: Presl, Rel. Haenk. 1: *pl. 41, f. 1*; Misc. Publ. U. S. Dep. Agr. 243: *f. 89*.

158. *PRINGLEOCHLOA* Scribn. Bot. Gaz. 21: 137. 1896.

Dioecious, stoloniferous, perennial grasses with short flat blades and slender ascending culms. Staminate spikes rhomboid or oblong, appressed, alternate on opposite sides of the short flattened axis, approximate but not crowded; spikelets 1-flowered, pectinately arranged, the rachilla prolonged beyond the floret in a short stipe; lemma 3-nerved, 3-dentate, awnless; palea acuminate, as long as the lemma. Pistillate spikes obovate, crowded in a rather dense head, alternate on opposite sides of the short flattened axis, the rachis prolonged beyond the spikelets in a hairy bristle; spikelets crowded on the short rachis, not pectinately arranged, 1-flowered, with 2 or 3 rudimentary several-awned florets above the fertile one; lemma acute, 3-nerved, the lateral nerves excurrent in short awns; palea equal to the lemma, the nerves excurrent in very short awns.

Type species, *Atheropogon stolonifer* Pourn.

1. *Pringleochloa stolonifera* (Fourn.) Scribn. Bot. Gaz.

21: 138. 1896.

Atheropogon stolonifer Fourn. Mex. Pl. Gram. 2: 140. 1886.*Cathestecium stoloniferum* D. Griff. Contr. U. S. Nat. Herb. 14: 362. 1912. (Based on *Atheropogon stolonifer* Fourn., misapplied.)

Culms slender, erect or geniculate at the nodes, those of the staminate plants 5–30 cm., those of the pistillate plants 2–5 cm. tall, the pistillate inflorescences often nearly hidden in the foliage at the base of the plant; lower sheaths crowded, densely pubescent at the base, glabrous upward, usually with a tuft of long hairs at the throat, the upper ones much shorter than the internodes, glabrous; ligule ciliate, about 0.2 mm. long; blades firm, flat, acute, 1–6.5 cm. long, 1.5–2 mm. wide, the upper culm-blades much reduced, the lower surface glabrous, the upper surface and margins scabrous; staminate spikes 3–6, mostly appressed, 0.5–1.5 cm. long; spikelets pectinate or nearly so, 5–6 mm. long, subsessile, densely pubescent at the base; first glume narrow, acuminate to subulate, 3.5 mm. long, sparsely pilose; second glume much broader, acute, 4.5–5 mm. long, glabrous or very sparsely pilose; lemma 5 mm. long, glabrous, the tip 3-toothed; stamens 3 mm. long; pistillate spikes 3–4, approximate on a short axis, the lower ones nearly enclosed in the sheath; spikelets 4–6, crowded; glumes villous, the first subulate, 3 mm. long, the second broader and a little longer, minutely toothed, mucronate; lemma 4 mm. long, acute, glabrous, the lateral nerves excurrent 1 mm. below the summit in awns about 1 mm. long; palea as long as the lemma, the nerves excurrent; rudimentary florets 2–3, the awns as much as 4 mm. long, hispid in the lower half, scabrous above.

TYPE LOCALITY: La Parada, Sierra de Oajaca [Puebla?] (*Liebmann 588*).

DISTRIBUTION: Dry plains and sterile open ground, Puebla.

ILLUSTRATION: Bot. Gaz. 21: *pl. 13*.159. *BUCHLOË* Engelm. Trans. Acad. St. Louis 1: 432. 1859.*Bulbilis* Raf.; Kuntze, Rev. Gen. 763. 1891. (Type species, *Sesleria dactyloides* Nutt.)

Diocious, rarely monoecious stoloniferous perennial grasses with short slender culms and flat narrow blades. Staminate spikes 1–4; spikelets 2–3-flowered, pectinately arranged in two rows on one side of a narrow rachis; glumes acute, 1-nerved, the second about twice as long as the first; lemmas acute or subobtusely, 3-nerved, awnless. Pistillate spikes 1 or 2; spikelets 1-flowered, arranged in short heads or spikes, these falling entire, the short thickened indurate rachis and second glumes forming a false involucre around the florets; first glume thin, acuminate, 1-nerved, sometimes obsolete; second glume obscurely nerved, very thick, broad and clasping, enclosing the floret, narrowed toward the summit into three broad scabrous teeth; lemma indurate, obscurely nerved, 3-toothed, the central tooth twice as long as the lateral ones, the margins incurved, overlapping, enclosing the palea; palea firm, about as long as the lemma, the nerves obscure, the tip bifid, the margins enclosing the flower.

Type species, *Sesleria dactyloides* Nutt.1. *Buchloë dactyloides* (Nutt.) Engelm. Trans. Acad. St. Louis

1: 432. 1859.

Sesleria dactyloides Nutt. Gen. 1: 65. 1818.*Antheplora axilliflora* Steud. Syn. Gram. 111. 1854. (Type from Texas, *Drummond*.)*Calanthera dactyloides* Kunth; Hook. Jour. Bot. & Kew Misc. 8: 18. 1856. (Based on *Sesleria dactyloides* Nutt.)*Casiosyega dactyloides* Fourn. Bull. Soc. Bot. Belg. 15: 470. 1877. (Based on *Sesleria dactyloides* Nutt.)*Bulbilis dactyloides* Raf.; Kuntze, Rev. Gen. 763. 1891. (Based on *Sesleria dactyloides* Nutt.)

Plants forming dense sod, the staminate culms 5–20 cm. tall, the pistillate shorter, partly hidden among the leaves; sheaths overlapping, obscurely keeled, glabrous on the back, villous at the throat; ligule ciliate, 0.5 mm. long; blades flat, attenuate, curled, as much as 10 cm. long, 1–1.5 mm. wide, sparsely pilose, scabrous on the margins; staminate spikes 1 or 2, rarely 3 or 4, 0.5–1.5 cm. long, spreading, the spikelets 4 mm. long; pistillate spikes 2, enclosed in

the two upper approximate, shortened and much broadened sheaths, 7 mm. long, 3-4 mm. thick, 4-5-flowered, some of the spikelets reduced to the thickened second glume; fertile lemma about 5 mm. long.

TYPE LOCALITY: Grassy plains of the Missouri (Nuttall).

DISTRIBUTION: Dry plains, western Minnesota to central Montana, and southward to northern Mexico.

ILLUSTRATIONS: Trans. Acad. St. Louis 1: *pl. 12, 14, f. 1-17*; Bull. U. S. Dep. Agr. Bot. 12¹: *pl. 47*; Bull. U. S. Dep. Agr. Agrost. 7: *f. 220*; Bull. U. S. Dep. Agr. 772: *f. 118*; Britt. & Brown, Ill. Fl. f. 418; ed. 2. f. 557; Hitchc. Man. f. 1108.

160. CATHESTECUM Presl, Rel. Haenk. 1: 294. 1830.

Annual or perennial grasses, frequently stoloniferous, with relatively short flat blades and 3 to 10, V-shaped or rhomboid, spreading spikes, evenly arranged on opposite sides of the slender flattened axis. Spikes falling entire, consisting of three spikelets, the lateral ones 2-flowered, staminate or sterile, rarely pistillate, the upper floret sometimes much reduced; central spikelet 3-flowered, the lower floret usually pistillate, sometimes staminate, very rarely perfect, the upper florets staminate or sterile; first glume short, that of the central spikelet usually flabellate; second glume about as long as the spikelet, acuminate, sometimes minutely lobed and mucronate; lemmas dissimilar, the lower ones cleft about one fourth their length, the awns from between the lobes equaling or slightly exceeding them, the upper ones deeply cleft, the awns villous in the lower part, extending as much as 3 mm. beyond the lobes; the lemmas all alike in spikes wholly staminate; palea nearly equaling the lemma, the nerves excurrent in short awns.

Type species, *Cathestecum prostratum* Presl.

Plants annual.

Culms slender, not more than 25 cm. (usually less than 15 cm.) long, freely branching from all the nodes, the upper one with two or more slender leafless flowering branches.

Culms coarse, as much as 50 cm. long, if less than 25 cm., the upper node with a single inflorescence or sometimes a second hidden in the sheath.

Plants perennial.

Plants tufted; third floret reduced to a cluster of 5-7 awns on a naked stipe.

Plants stoloniferous; third floret glumaceous, 3-awned.

Lower florets of the lateral spikelets pistillate, rarely one of them staminate, the upper usually sterile, rarely pistillate or staminate; lower lemmas usually densely pubescent.

Lower florets of lateral spikelets staminate or sterile; lower lemmas glabrous or only sparsely pubescent; spikes dimorphous.

Lateral spikelets with well developed, usually staminate florets; blades, at least some of them, commonly more than 2 cm. long, often involute, not becoming curled; stolons comparatively short, conspicuously arching.

Lateral spikelets imperfectly developed, the florets mostly sterile, the lemmas reduced; blades mostly 1-2 cm. long, flat, rarely longer, becoming curled with age; stolons long, widely spreading, not arching.

1. *C. prostratum*.

2. *C. annuum*.

3. *C. multifidum*.

4. *C. varium*.

5. *C. erectum*.

6. *C. brevifolium*.

1. *Cathestecum prostratum* Presl, Rel. Haenk. 1: 295. 1830.

Annual; culms slender, in small dense tufts, decumbent-spreading, geniculate at the nodes, freely branching, 4-35 cm. long, glabrous; sheaths, except the lowermost, shorter than the internodes, glabrous or sparsely pilose near the margins and in the mouth, with a pubescent line across the collar; ligule ciliate, about 0.3 mm. long; blades flat, acute, glabrous on the lower surface, scabrous and sparsely pilose on the upper, scabrous on the margins, 1.5 cm. long, 1-2 mm. wide, the upper ones and those on the short branches much reduced; inflorescence terminal and axillary from the upper sheaths; spikes 3-7, ascending or finally spreading, about 4 mm. long, not including the awns; first glume of the lateral spikelets narrow, acuminate, about 2 mm. long, that of the central floret broad, scale-like, less than 1 mm. long; second glume 3 mm. long, hirsute, those of the lateral spikelets acuminate, that of the central spikelet broader, abruptly acute or subobtuse, sometimes lobed, mucronate; florets 3 mm. long, dissimilar; lower floret of the lateral spikelets sterile, the lemma glabrous or sparsely pilose, shallowly lobed, the awns equaling or only slightly exceeding them; upper floret staminate, the lemma cleft to the middle, the awns extending 1 mm. beyond the lobes, hispid on the

lower part; lower floret of the central spikelet pistillate, the lemma sparsely pilose on the back and on the margins, the lobes 1 mm. long, the awns subequal, 1.5 mm. long, scabrous and more or less hispid; upper florets staminate, the lemmas similar to those of the upper florets of the lateral spikelets, but more deeply lobed, the awns extending 2-3 mm. beyond the lobes; stamens 1.5 mm. long.

TYPE LOCALITY: Mexico (*Haenke*).

DISTRIBUTION: Limestone hills, central Mexico.

ILLUSTRATION: Presl, Rel. Haenk. 1: *pl.* 42.

2. *Cathestecum annum* Swallen, Jour. Wash. Acad. 27: 497. 1937.

Annual; culms branching, geniculate, decumbent-spreading, rooting at the lower nodes, 15-50 cm. tall, glabrous; sheaths mostly shorter than the internodes, glabrous or more or less pilose in the throat and on the margins; ligule ciliate, 0.5-1 mm. long; blades flat, firm, acuminate, glabrous on the lower surface, pilose on the upper, very scabrous on the margins, 3-8 cm. long, 2-3 mm. wide, the upper ones reduced; spikes 5-9, about 6 mm. long, the rachis prolonged as a slender hairy bristle; first glume of the lateral spikelets acuminate, 2 mm. long, that of the central minute, flabellate; second glume acuminate, often minutely lobed and mucronate, 4-5 mm. long, hirsute-villose at least on the lower half of the keel; florets of the lateral spikelets staminate or sterile, the lemmas 3.5-4 mm. long, sparsely pilose on the margins, the lobes 1.5 mm. long, the awns equaling or slightly exceeding them, appressed-hispid; lower floret of the central spikelet pistillate, the lemma 4 mm. long, glabrous or sparsely pilose on the lower part of the back, shallowly lobed, the lateral lobes 1 mm. long, the awns strong, extending 0.5-1 mm. beyond the lobes, glabrous, the upper florets staminate, the lemmas a little shorter than the lower, glabrous, deeply cleft, the lateral lobes 2.5 mm. long, the awns extending 2-3 mm. beyond the lobes, hispid on the lower half, scabrous on the upper.

TYPE LOCALITY: Balsas, Guerrero (*Hitchcock 6776*).

DISTRIBUTION: Prairies and open ground, Guerrero.

3. *Cathestecum multifidum* D. Griff. Contr. U. S. Nat. Herb. 14: 360. 1912.

Perennial; culms slender, densely tufted, erect or geniculate at the lower nodes, branching, 15-40 cm. tall, glabrous, the nodes pubescent; sheaths glabrous, pilose in the throat, the lower crowded, the upper much shorter than the internodes; ligule ciliate, 0.5 mm. long; blades flat, acuminate, glabrous or sparsely pilose on the upper surface, the margins very sparsely papillose-pilose, 2.5-8 cm. long, 1-1.5 mm. wide, the upper culm-blades much reduced; spikes 5-10, mostly secund, 3-4 mm. long, excluding the awns, the rachis prolonged in a slender bristle; first glume very narrow, acuminate, about 2 mm. long, sparsely hirsute; second glume of the lateral spikelets acuminate, hirsute, 2.5 mm. long, that of the central spikelet broader, pilose, notched, with a stout awn nearly 1 mm. long from between the teeth; lower floret of the lateral spikelets staminate, the lemma 2.5 mm. long, 3-lobed, the lobes mucronate, the upper florets staminate or sterile, 2 mm. long, deeply 5-cleft, the divisions aristate; lower floret of the central spikelet pistillate, the lemma 3 mm. long, glabrous on the back, the margins sparsely pilose, the tip 3-lobed, the lobes acuminate, sometimes mucronate, the upper florets staminate or sterile, about 2.5 mm. long, deeply 5-cleft, sometimes to the base, the lobes narrow, acuminate, the awns 2-3 mm. long, the uppermost floret sometimes reduced to awns.

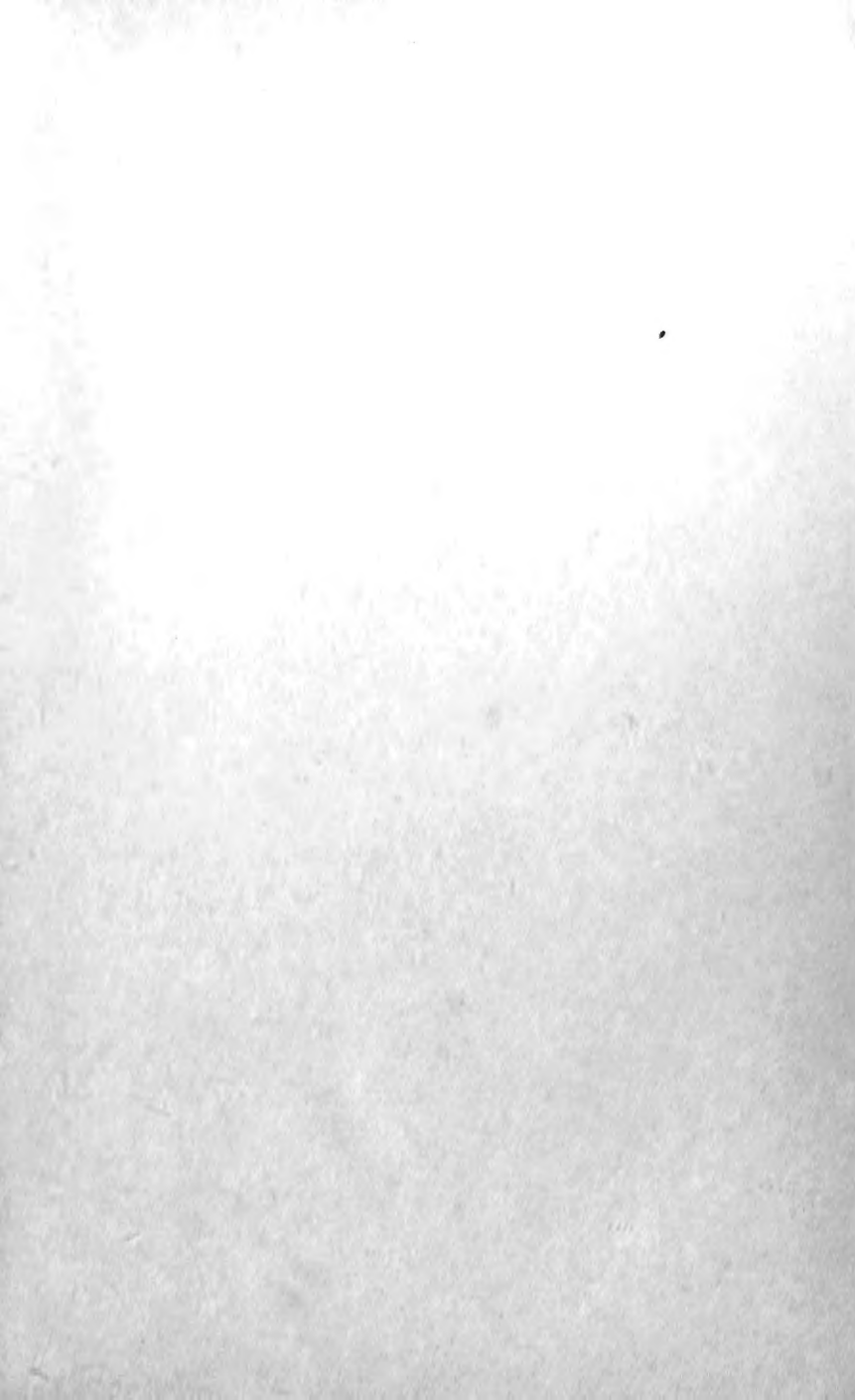
TYPE LOCALITY: Guerrero (*Griffiths*).

DISTRIBUTION: Rocky hills, southern Mexico.

ILLUSTRATION: Contr. U. S. Nat. Herb. 14^o: *f.* 24.

4. *Cathestecum varium* Swallen, Jour. Wash. Acad. 27: 498. 1937.

Perennial, stoloniferous, the stolons slender, wiry, with commonly arched internodes 3-15 cm. long; culms in small dense tufts, slender, branching, erect or geniculate at the nodes, 10-15 cm. tall, glabrous; lower sheaths crowded, glabrous, or the lowermost densely villose,





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